United States
Department of
Agriculture

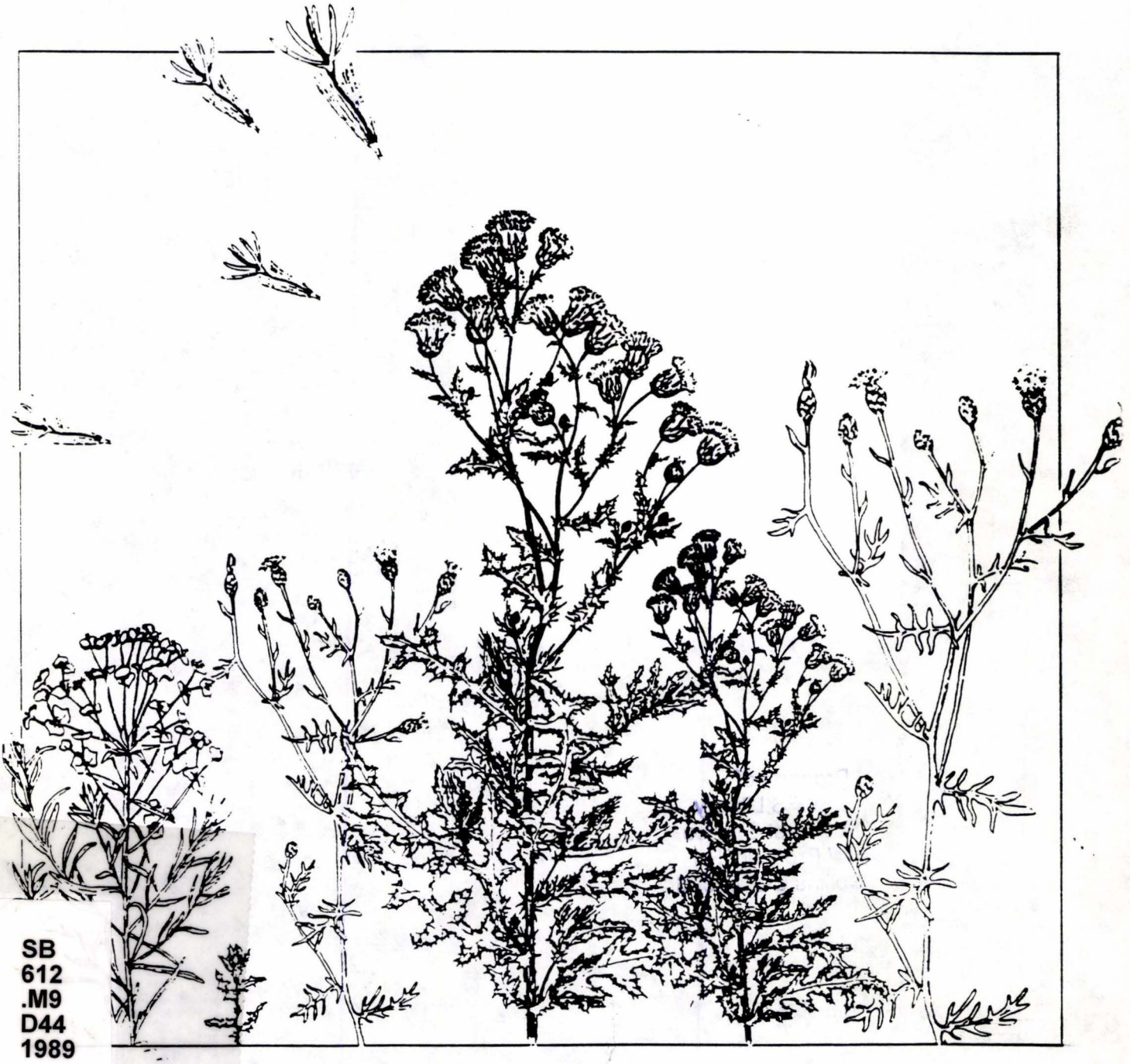
Forest
Service

**Deerlodge
National
Forest**

Butte, Montana

Deerlodge National Forest Noxious Weed Control Program

Final Environmental Impact Statemen
Supplement - July, 1989



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FINAL SUPPLEMENT

to the

Deerlodge National Forest
Noxious Weed Control Program
1987 Environmental Impact Statement

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Abstract: This Final Environmental Impact Statement Supplement describes the proposed USDA Forest Service program for the control of noxious weeds and poisonous plants within the Rock Creek drainage and on additional project areas located throughout the Deerlodge National Forest. This Supplement to the 1987 EIS proposes to extend weed control activities to an additional 59 projects containing 820 acres within Deer Lodge, Jefferson, Granite, Powell, Madison, and Silver Bow Counties of Montana. In addition, 41 existing projects have been modified. Three alternatives including a "No Action" alternative are presented. The environmental effects that can be reasonably foreseen are discussed. A Human Health Risk Analysis concerning the use of two pesticides (2,4-D, and picloram) and their potential effect on human health is presented.

Date of transmission to EPA and the public: July 12, 1989

Draft_____ Final__X__

TABLE OF CONTENTS

	PAGE	(1987 EIS)
Summary	S-1	(S-1)
Chapter 1 - Introduction		
Purpose of and Need for Action	I-1	(I-1)
Issues	I-1	(I-2)
Chapter 2 - Description of Alternatives - Including the Proposed Action		
Alternatives Considered but Eliminated from Detailed Analysis.	II-1	(I-1)
Alternatives Considered in Detail	II-1	(II-1)
Alternative Comparisons	II-3	(II-3)
Chapter 3 - Description of the Affected Environment		
Physical Environment	III-1	(III-1)
Biological Environment	III-1	(III-2)
Cultural Resources	III-3	(III-6)
Recreation and Visual Resources	III-3	(III-7)
Wilderness and Special Areas	III-4	(III-7)
Social and Economic Environment	III-4	(III-7)
Chapter 4 - Environmental Consequences		
Air Quality Impacts	IV-1	(IV-1)
Soil Impacts	IV-1	(IV-1)
Water Resource Impacts	IV-1	(IV-2)
Vegetation Impacts	IV-2	(IV-3)
Animal Impacts	IV-3	(IV-5)
Cultural Impacts	IV-6	(IV-10)
Visual Resource and Resource Impacts	IV-6	(IV-10)
Wilderness Area Impacts	IV-8	(IV-11)
Social and Economic Impacts	IV-8	(IV-11)
Human Health Risk Impacts	IV-10	(IV-14)
Cumulative Effects	IV-10	
Chapter 5 - Consultation with Agencies, Organizations, and Individuals		
Agencies and Organizations That Received Copies of the Draft...	V-1	(V-1)
Comments and Responses		
Chapter 6 - List of Preparers	VI-1	(VI-1)
Glossary	G-1	(G-1)
References	R-1	(R-1)

Page

Appendix A - Pesticide Use Proposals..... A-1

Appendix B - Social and Economic Environment..... B-1

Appendix C - Management Requirements..... C-1

Appendix D - Sensitivity of Selected Aquatic Organisms to Various Formulations of Two Herbicides..... D-1

Appendix E - Biological Assessment - Threatened and Endangered Species.... E-1

Appendix F - Human Health Risk Analysis - Deerlodge National Forest..... F-1

Appendix G - Model Development..... G-1

Appendix H - Model Output for Examined Alternatives..... H-1

Appendix I - Sensitivity Analysis for Alternatives..... I-1

Appendix J - Noxious Weed and Poisonous Plant Management Guidelines..... J-1

Appendix K - Aquatic Monitoring Plan - Rock Creek..... K-1

SUMMARY

Substitute the following for the Summary in the 1987 EIS.

STATEMENT OF PURPOSE AND NEED (CHAPTER 1)

The purpose of this document is to analyze alternative control methods for noxious weeds and poisonous plants within the Deerlodge National Forest. Noxious weeds, and to a lesser degree poisonous plants, are a major concern to land managers, agriculture interests, wildlife interests, and others who are involved in rangeland management in Southwest Montana.

Sixteen major issues were identified by the interdisciplinary team (ID team) as representative of the public issues and concerns received during the scoping process. Several individuals, organizations, and agencies participated in the public involvement phase of this planning process.

ISSUES

The following list of issues, determined through the scoping process, have been selected and are addressed in this Final Supplement to the 1987 EIS. 1/

1. Several people residing in or near the Rock Creek drainage are allergic to herbicides.

2. Herbicide treated areas may present a threat to Native Americans who frequently use wild plants for food.

3. The Rock Creek drainage must be different from the rest of the Deerlodge National Forest or an experimental area since it is being analysed separately.

4. Weed infested areas have higher soil erosion rates than uninfested areas.

5. Herbicides affect plants grazed by wildlife as well as weeds, and wildlife eat some targeted weed species, i.e. toadflax.

6. Herbicide use may affect human health, both onsite and offsite.

7. Herbicide use may affect surface water and ground water quality, the fisheries associated with these waters, and fish-eating wildlife. This concern is highest in Rock Creek, a Blue Ribbon Trout Stream.

8. Lack of coordination and cooperation on weed control projects with the respective county governments, other public land management agencies, and private land owners could reduce potential control and increase costs.

1/ Issues 1-5 are new issues raised during scoping for the supplement.

9. Continued spread of noxious weeds will reduce forage production on range land at a constantly increasing rate if weeds are not checked.

10. Livestock ingestion of poisonous plants will continue to cause domestic livestock deaths unless control is achieved.

11. Persistence of some herbicides and the cumulative effect of continued herbicide use may contribute to a future undesirable impact.

12. Herbicide use may affect threatened and endangered plant and animal species.

13. Herbicide use may not be economically efficient.

14. Herbicide application may affect nontarget species.

15. There is no effective alternative to the use of herbicides.

16. The rate of weed spread requires that control be effective in the near future; if not control will be too late.

Four additional issues were considered and dropped.

1. Wilderness Area herbicide application.
2. Newly constructed roads as pathways for increased infestations.
3. Aerial herbicide application is cheaper than ground application and other non-herbicide control methods.
4. The use of the herbicide clopyralid for knapweed.

DESCRIPTION AND ALTERNATIVE COMPARISON, INCLUDING PROPOSED ACTION (CHAPTER 2)

A detailed summary of the analysis for three alternatives is displayed in this document. Alternative 2, Integrated Weed Control Including Herbicide Use, is the selected alternative.

Alternative 1: No Action

Target plants would not be treated. Current treatment programs would be halted. Preventive measures would continue under this alternative.

Alternative 2: Integrated Weed Control Including Herbicide Use

Biological agents, herbicide, and cultural treatment would be used to control target species. Preventive measures would continue under this alternative.

Alternative 3: Integrated Weed Control Without Herbicide

Biological agents and cultural treatment would be used to control target species. Preventive measures would continue under this alternative.

Table S-1 below lists the various treatments and the area proposed for treatment by alternative.

Table S-1 Area Proposed for Treatment by Alternative

	Alternative 1 Acres	Alternative 1 Acres	Alternative 2 Acres	Alternative 2 Acres	Alternative 3 Acres	Alternative 3 Acres
Total Area Treated	-		4,191		3,673	
Herbicide		-		2,332		-
Biological Agents		-		1,830		1,830[1/]
Cultural Treatment		-		29		2,497[1/]
Untreated Area	4,191		0		518	
Total Area with Weeds	4,191		4,191		4,191	

[1/] Some areas will be treated with biological agents and cultural methods - the total of two treatments exceeds total treated and total weeds.

AFFECTED ENVIRONMENT (CHAPTER 3)

This chapter describes the environment that would be affected by implementation of the alternatives. The affected environment includes air quality; soils; water quality; vegetation; animals; fish; cultural resources; visual resources; recreation; economic conditions; social environment; and human health.

ENVIRONMENTAL CONSEQUENCES (CHAPTER 4)

Environmental consequences are the environmental changes that would be expected from implementing an alternative program. The varying amounts of activities and uses between alternatives result in different levels of environmental consequences. The following are brief comparisons of effects by alternative.

Air quality: Existing air quality is excellent. No change is anticipated except for a short-term localized mild odor associated with use of some herbicides in Alternative 2.

Soils: Existing condition is good except for minor areas needing improvement. Soil productivity gains would be accomplished under Alternative 2 and 3. Loss of soil productivity under Alternative 1 due to weed spread.

Water quality: Existing condition is good with no detectable levels of herbicides in streams or groundwater. No changes will occur under Alternatives 1 and 3. Barely detectable amounts of herbicides may enter streams during storm events following treatment under Alternative 2. Overall impact to water quality is insignificant.

Vegetation: Native and desirable plant communities would be displaced by noxious weeds significantly under Alternative 1. Alternative 3 would have a similar effect over a much smaller areas due to invasion by noxious weeds. Alternative 2 would reduce or eliminate the spread of noxious weeds into native plant communities. Minor localized impacts will affect nontarget species in areas treated with herbicide or hand grubbing.

Animals: Forage production will be reduced significantly for livestock and wildlife as noxious weeds continue to expand under Alternative 1. Losses in forage production would be reduced under Alternative 3 and could be greatly reduced or eliminated under Alternative 2. Livestock losses to poisonous plants will continue under Alternatives 1 and 3. Herbicide concentrations proposed are well below levels that could impact animals.

Fish: Habitat is in fair to excellent condition, and control methods are not expected to adversely impact fish habitats, including those in Rock Creek. However, there is a slight risk of impacts from herbicide application on five percent of the proposed projects under Alternative 2.

Cultural resources: No changes are anticipated under any alternative.

Visual resources: No changes are anticipated under any alternative.

Recreation: There are no anticipated effects under Alternatives 1 and 3. A slight impact from chemical odors and dead vegetation may occur in the vicinity of 17 developed recreation sites under Alternative 2.

Social environment: The local social environment is somewhat reliant on agriculture and wildlife related industry and opportunity. Any adverse impact on rangeland values will adversely affect opportunities in these fields. Rangeland values and the related social environment will be adversely impacted as noxious weeds spread and further reduce forage production under Alternative 1. Alternative 3 would reduce these impacts and Alternative 2 would essentially eliminate them. Alternative 2 introduces herbicide use, which is objectionable to some individuals but would maintain agency cooperation with counties and private landowners.

Economic conditions: Serious impacts on local economies are expected over the next 20 years as agriculture-related resources respond to expanding noxious weed infestations under Alternative 1. The resulting loss to livestock and wildlife resources would be significant. Local labor would benefit from labor intensive manual treatment under Alternative 3. Improved vegetative condition should result from Alternatives 2 and 3, resulting in an improvement over current conditions.

The following is a ranking of alternatives from best to worst (best meaning least cost) based on the present value of the total cost over a 23 year period.

Table S-2 Present Value of the Total Cost, Ranked by Alternative

Alternative	Present Value Total Cost
2. Integrated Weed Control Including Herbicide Use	$ 891,737
1. No Action	$1,942,584
3. Integrated Weed Control Without Herbicide	$4,122,600

Human health: No adverse impacts to the general population are anticipated under any alternative, including use of the herbicides 2,4-D and picloram. Workers are limited to hand applying 2 lbs or less 2,4-D per day in order to maintain adequate safety margins. The Acceptable Daily Intake (ADI) is exceeded for workers' average dose of 2,4-D but only for 30 days or less per year. The ADI assumes daily exposure for a lifetime.

Cumulative Effects: Alternatives 1 and 3 have no cumulative effects except those discussed previously concerning weed spread. Under alternative 2, this analysis assesses the cumulative herbicide effects on-Forest because all projects are assumed to be treated in one year. Two potential cumulative effects are identified when weed control activities on-Forest are considered with those off-Forest. The first, elevated herbicide concentrations in streamflows, is not likely because listed precautions should prevent herbicide from reaching streams. Rainstorms that wash herbicide into streams on-Forest and off-Forest will insignificantly extend the time period that a stream reach is affected by herbicide; it will not increase the concentration. The second, herbicide doses affecting migratory animals, is not likely to be significant because small herbicide amounts are applied to wide-spread, local areas on-Forest and because the herbicides used do not bioaccumulate in animals.

CHAPTER I

INTRODUCTION

During the preparation of the 1987 Deerlodge National Forest Noxious Weed Program EIS, the Rock Creek drainage was not included. Rock Creek was excluded to allow additional time for analysis, for development of a monitoring plan, and for public involvement for this important Blue Ribbon fishery.

This supplement deals with 21 projects totalling 545 acres within the Rock Creek drainage and 38 projects totalling 275 acres in other areas of the Forest which are proposed as additions to the weed control projects listed in the 1987 EIS. In addition 41, projects have been modified to reflect new inventory information. All of these additions are very similar to projects that were evaluated in the 1987 EIS including their environmental setting.

The analytical procedures and documentation for this supplement are the same as those used in the original analysis. Therefore, the structure of the original document was used for the supplement in order to help readers identify changes that have been made. All chapters and subheadings in the original document are included here. Portions of the original EIS that are not changed by the supplement are so noted. Those with changes have a narrative that modifies or supplements the original document. Where appropriate, comparisons are made between the old and new document. Alternative 2 is the selected altternative.

PURPOSE AND NEED FOR ACTION

No changes

ISSUES

During the scoping process 5 new issues were identified and are addressed in this supplement. (Add these issues to those listed on page I-2, 1987 EIS.)

1. Several people residing in or near the Rock Creek drainage are allergic to herbicides.

2. Herbicide treated areas may present a threat to Native Americans who frequently use wild plants for food.

3. The Rock Creek drainage must be different from the rest of the Deerlodge National Forest or must be an experimental area since it is being analysed separately.

4. Weed infested areas have higher soil erosion rates than uninfested areas.

5. Herbicides affect plants grazed by wildlife as well as weeds, and wildlife eat some targeted weed species, i.e. toadflax.

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The following issues were raised during the scoping process and were not added to the list because they either are listed in the original document as issues or were addressed as such in the narrative. These issues are addressed in this supplement to the extent necessary. The note in parentheses identifies where each issue is either listed or addressed in the 1987 EIS.

1. Herbicides have the potential to get into streams and groundwater, and Rock Creek is a Blue Ribbon Trout Stream. (Issue 2, 1987 EIS)

2. Our weed control efforts should be coordinated with county weed districts and other agencies. (Issue 3, 1987 EIS)

3. The spread of weeds from Forest Service administered lands to adjacent land ownership is a concern. (Issue 3, 1987 EIS)

4. An economic evaluation should help select the preferred alternative. (Issue 8, 1987 EIS)

5. Put a moratorium on road construction to help stop the spread of weeds. (Issue 12, 1987 EIS)

6. Soils in the Rock Creek drainage are permeable and may allow herbicide to percolate into ground water. (Issue 2, pp. III-1, IV-1 and IV-2 in 1987 EIS. Soils in Rock Creek are similar to those described for the Forest in general)

7. There is no effective alternative to the use of herbicides, especially for large weed infestations. (1987 EIS pp II-1,2,4,5 and p. IV-4)

8. The rate of weed spread requires that control be effective in the near future; if not control will be too late. (1987 EIS p. IV-4 and Appendix G,H, and I)

The following issues raised during the scoping process are not treated in the 1987 EIS or this supplement because they are outside of the scope of these documents. However they are part of the overall weed control program and all are being practised now. All will continue under Alternative 2, the selected alternative. See Noxious Weed and Poisonous Plant Management Guidelines,Appendix J.

1 Education is needed to help prevent and control the spread of weeds. (Appendix J, III.A)

2 Commercial Forest users should be required to control weeds resulting from their activities. (Appendix J, III.B.1)

3 Prevention is a weed control method - what land management practises can be incorporated into management activities to prevent weed spread. (Appendix J, III.B.1)

4. A continuing, accurate inventory of weed infestations on the Forest is necessary. (Appendix J, III.C.1.c and e)

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Two additional issues were considered. Both were dropped from further consideration in this supplement for the following reasons:

1. Aerial herbicide application is cheaper than ground application and other non-herbicide control methods.

   Only ground methods are considered for herbicide application in this supplement. Aerial application of herbicide is generally cheaper, especially when large continuous areas are treated. However, the Forest strategy at present is to control the smaller, scattered infestations with herbicide while using available biologic controls to slow the spread of large infestations. Aerial application methods are not as efficient and, in some cases, not even feasible for treating these areas. This is especially true where conifer and deciduous trees and shrubs encroach on the infested area. Aerial applications will be evaluated in the future for use on the large projects and areas where adjacent landowners are using these methods.

2. The herbicide clopyralid is a narrow spectrum herbicide that is effective on knapweed.

   We are aware of this herbicide and expect to use it on appropriate weed infestations in the future. Presently, ground application of 2,4-D and picloram have proven equally effective without the higher cost of clopyralid.

The noxious weeds and poisonous plants that are known to occur on the Deerlodge National Forest are listed below. The abbreviations are listed because they are used in the Pesticide Use Proposals in Appendix A.

Table I-1 Deerlodge National Forest Noxious Weeds

COMMON NAME	SCIENTIFIC NAME	ABBREVIATION
Whitetop	Cardaria draba	CADR
Musk Thistle	Carduus nutans	CANU
Spotted Knapweed	Centaurea maculosa	CEMA
Russian Knapweed	Centaurea repens	CERE
Canada Thistle	Cirsium arvense	CIAR
Houndstongue	Cynoglossum officinale	CYOF
Tall Larkspur	Delphinium occidentale	DEOC
Leafy Spurge	Euphorbia esula	EUES
Dalmation Toadflax	Linaria dalmatica	LIDA
Butter and Eggs	Linaria vulgaris	LIVU
Tansy Ragwort	Senecio jacobaea	SEJA

CHAPTER II

DESCRIPTION OF ALTERNATIVES - INCLUDING THE PROPOSED ACTION (Page II-1)

The Alternatives described in the 1987 EIS were reevaluated and found to be adequate and responsive to the noxious weed situation in the Rock Creek drainage and on other new projects scattered throughout the Deerlodge National Forest. The numerical summaries have been updated by adding the new projects and modifying those that are changed with this supplement.

Alternatives Considered but Eliminated from Detailed Analysis

No Change.

Alternatives Considered in Detail

No Change.

Alternative 1: No Action

No Change.

Alternative 2: Integrated Weed Control including Herbicide Use (Page II-1)

Substitute the following beginning at the bottom of page II-1.

> This is a fully integrated control alternative, using chemical, biological, and cultural control (hand grubbing and mowing) methods. Preventive measures would be implemented under this alternative (see Appendix J). There are 4,191 acres of weeds to be treated. About 2,330 acres will be treated with herbicide; and approximately 1,830 acres will be treated with biological agents. Cultural treatment is scheduled for about 29 acres where environmental constraints or chemical restrictions limit the effectiveness of, or prevent the use of herbicides.
>
> Burning and the use of tillage equipment were not considered because these methods have limited effectiveness and the shape and size of most infestations make these methods impractical. In addition, the topography and accessibility of many sites severely limits the use of tillage equipment.
>
> The proposed projects range in size from 0.1 acres to 1,500 acres and total 4,191 acres. Of this total, 1,258 acres are road, railroad, and powerline right-of-way projects and 2,933 acres are rangeland projects.
>
> Herbicide would be used on rights-of-way and on scattered patches of weeds on rangeland. Biological agents would be used on 1,830 acres of large continuous infestations (three projects 130, 200, and 1,500 acres) in order

to slow the rate of spread. Sclerotinia fungus is proposed for use on Canadian thistle and knapweed. The seed head flies Urophora affinis and Urophora quadrifasciata are proposed for use on knapweed. The leafy spurge hawkmoth, Hyles euphorbiae is proposed for use on leafy spurge.

In addition, 232 acres of disturbance at 13 active or proposed mine sites have been identified as projects. No weeds have been identified on these areas at present. However, new weed infestations may occur and provisions for control of these weeds with the use of herbicides have been made. These projects are being evaluated now so weed control can begin if, and when, weeds begin to invade these areas of soil disturbance.

Alternative 2 also addresses new weed infestations identified during field work. Often these occur outside of identified project areas and are relatively small infestations that were not identified in our inventory. We evaluated "at-large projects" in this supplement to allow us to deal with these previously unknown sources of weed spread. Two types are to be evaluated: (1) small spot infestations less than 0.01 acre (area of a circle 24 feet in diameter), and (2) larger infestations up to 0.25 acre in size. Neither of these will be treated until they are evaluated by a licensed applicator.

The spot infestations will be evaluated based on conditions on site because very little herbicide will be used, less than 0.02 pounds Tordon or 2,4-D per spot. The areas between 0.01 acres and 0.25 acres will be evaluated relative to the overall landscape and other weed control efforts in the vicinity, generally the same watershed. The maximum amount of herbicide used for the above projects will be 0.5 pounds of Tordon or 2,4-D each.

Only 100 spots and 10 large projects will be permitted for each District annually or a maximum of 3.5 acres per District and 14 acres Forest wide. The herbicide rate used on the Forest varies from .5 to 2 pounds per acres so the maximum amount of herbicide applied to these projects will be between 1.75 pounds and 7 pounds per District or 7 pounds and 28 pounds Forest wide. Any of these projects will have significantly less impact than the inventoried projects already evaluated.

The maps at the end of the this Chapter identify proposed project locations and weed species to be treated. The first map has just the new and modified project locations treated in this supplement. The second map has all proposed projects from the 1987 EIS and this supplement.

59 new projects are proposed. 41 projects have water within 1,300 feet of some part of the project; of these, 21 have water within 500 feet of some part of the project. 13 projects have a full or part time residence within 2,600 feet of some part of the project; of these, 6 projects are within 1,300 feet of a residence. Additional project information is included in the project proposals in Appendix A.

The area treated annually under this Alternative will be a function of environmental and annual budget constraints. Project areas to be treated

each year will be evaluated and prioritized using the following criteria.

1. Productive grasslands and open timber below 6,500 feet elevation.
2. Key forage producing areas for domestick livestock and big game.
3. Knapweed and spurge are priority weed species - they generally have a higher spread rate than thistle, toadflax, and larkspur.
4. New or isolated infestations vs large infestations.
5. Coordination and cooperation with private control efforts, established Weed Districts, and other Government agencies.
6. Followup efforts on previously treated areas.
7. Infestations with high potential for a rapid rate of spread.

Alternative 3 - Integrated Weed Control Without Herbicide (Page II-3)

Substitute for the second sentence in the first paragraph on page II-3.

Knapweed would be culturally treated on approximately 2,500 acres and biological agents would be used on approximately 1,830 acres.

Alternative Comparisons (Page II-3)

Substitute the following for the remainder of Chapter II.

Table II-2 on the following pages compares the effects of implementing each of the alternatives. It is a summary of the major effects discussed in the Environmental Consequences chapter and elsewhere in this document. Table II-1 below lists the various treatments and the area proposed for treatment by alternative.

Table II-1 Area Proposed for Treatment by Treatment and by Alternative.

	Alternative 1		Alternative 2 [1/]		Alternative 3	
	Acres	Acres	Acres	Acres	Acres	Acres
Total Area Treated	0	-	4,191	-	3,673	-
Herbicides	-	0	-	2,332	-	0
Biological Agents	-	0	-	1,830	-	1,830 [2/]
Cultural Treatment	-	0	-	29	-	2,497 [2/]
Untreated Area	4,191	-	0	-	518	-
Total Area with Weeds	4,191		4,191		4,191	

1/ Acreage figures do not include the 232 acres of uninfested mine projects or the 14 acres of "at-large projects" discussed on the previous page. Therefore, a maximum of 246 additional acres would be treated with herbicide under this alternative if weeds invade the mine disturbed areas or if the maximum acreage of "at-large projects" is treated.

2/ Some areas will be treated with biological and cultural methods - total area of both treatments exceeds the total area treated and total area with weeds.

Table II-2

ALTERNATIVE IMPACT SUMMARY

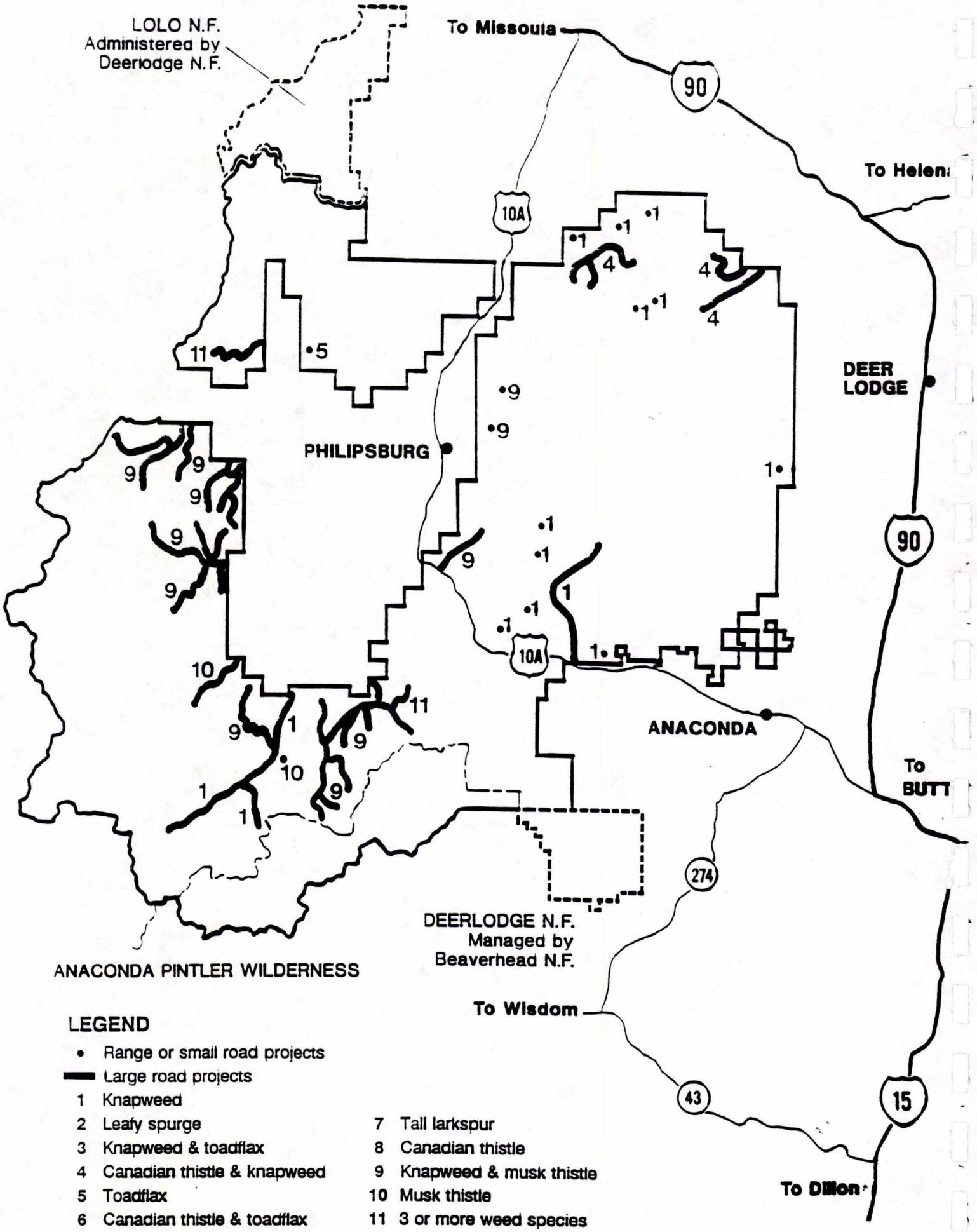
RESOURCE	NO ACTION (ALTERNATIVE 1)	HERBICIDE USE (ALTERNATIVE 2)	HAND GRUBBING (ALTERNATIVE 3)
Air Quality	No Effect	Chemical droplets in the air for very short period. Odor would persist for about 2 days in the immediate vicinity of the project.	No Impacts
Soils	Continued loss of productivity as weeds spread. Phytotoxins from knapweed affect more acres.	Productivity reductions halted and some productivety gains on treated acres. Overall net increase in productivity if enough area is treated annually (1,400 acres or more).	Additional losses in productivity but fewer acres than Alternative 1.
Water Quality	No Effect	Detectable levels of herbicide will enter streams as runoff (generally less than 0.1 ppm) for short time periods. No effect on ground water.	No Effect
Vegetation	Noxious weeds and poisonous plants would continue spreading at increasing rates. Desirable vegetation would continue to decline.	Noxious Weeds and poisonous plants will gradually be brought under control and overall productivity increased if approximately 1,400 acres of weeds are treated annually. Weed spread reduced on approximately 1,830 acres biological control.	Noxious weeds and poisonous plants would continue spreading but at lower rates than Alt. 1. 2,500 acres of knapweed eventually controlled but hand grubbed areas ideal seedbed for new infestation. Weed spread reduced on approximately 1,830 acres biological control.
Animals	Reductions in Livestock and big game range carrying capacity over time. Poisonous plants will continue to affect livestock.	Adverse impacts on animals from herbicide would be temporary and localized. Animal habitat will improve over the short and long term with overall benefit for wildlife and livestock if more than 1,400 acres treated annually. Habitat losses reduced if less than 1,400 acres treated annually. Poisonous plants would be controlled.	Reductions in Wildlife and livestock habitat in areas with weeds other than knapweed and where biological control is used. Habitat would improve on knapweed areas that are hand grubbed. Poisonous plants continue to affect livestock.
Fish	No Effect	Safety margin of 1 or greater on 95% of projects. Five percent entail slightly higher risks. All projects in Rock Creek have a safety margin of 1 or greater.	No Effect

Table II-1 ALTERNATIVE IMPACT SUMMARY (continued)

RESOURCE	NO ACTION (ALTERNATIVE 1)	HERBICIDE USE (ALTERNATIVE 2)	HAND GRUBBING (ALTERNATIVE 3)
Cultural	No Effect	Little to no probability of damage to cultural sites from hand grubbing 29 acres.	Very slight probability of damage if any to cultural sites from hand grubbing 2,500 acres.
Visual	No Effect	No Effect	No Effect
Recreation	No Effect	Slight impact from chemical odors and dead vegetation in the vicinity of developed recreation sites.	No Effect
Economic Efficiency	Total discounted costs $1,942,584	Total discounted costs $891,737	Total discounted costs $4,122,600
Economic Conditions	Continued livestock deaths and losss of range capacity. Forest weeds provide source for weed spread to adjacent lands.	No livestock deaths and reduction in loss of range capacity. Reduced potential for weed spread on and off Forest.	Slight reduction in loss of range capacity and no reduction in livestock deaths. Slight reduction in potential for weed spread on and off Forest. More seasonal jobs because grubbing is labor intensive.
Discounted Income Loss	$5,860,548	$50,255	$446,826
Social	Disrupts cooperative efforts with other agencies and landowners. Perceived threat to people in agriculture related business and jobs.	Permits cooperating with other agencies and landowners. Perceived threat to those wary of herbicide use.	Cooperation with other agencies and landowners but effectiveness of biological control is questionable. People in Agriculture related business and jobs uneasy about effectiveness.
Human Health	No Effect	Application of 2,4D limited to 2 lbs. per day for each worker to maintain adequate safety margins. ADI exceeded for average 2,4D worker dose, but workers will be exposed to this dose for 30 days or less per year. ADI assumes daily exposure for life.	No Effect

WEED INFESTATIONS PROPOSED FOR TREATMENT

New and Modified Projects

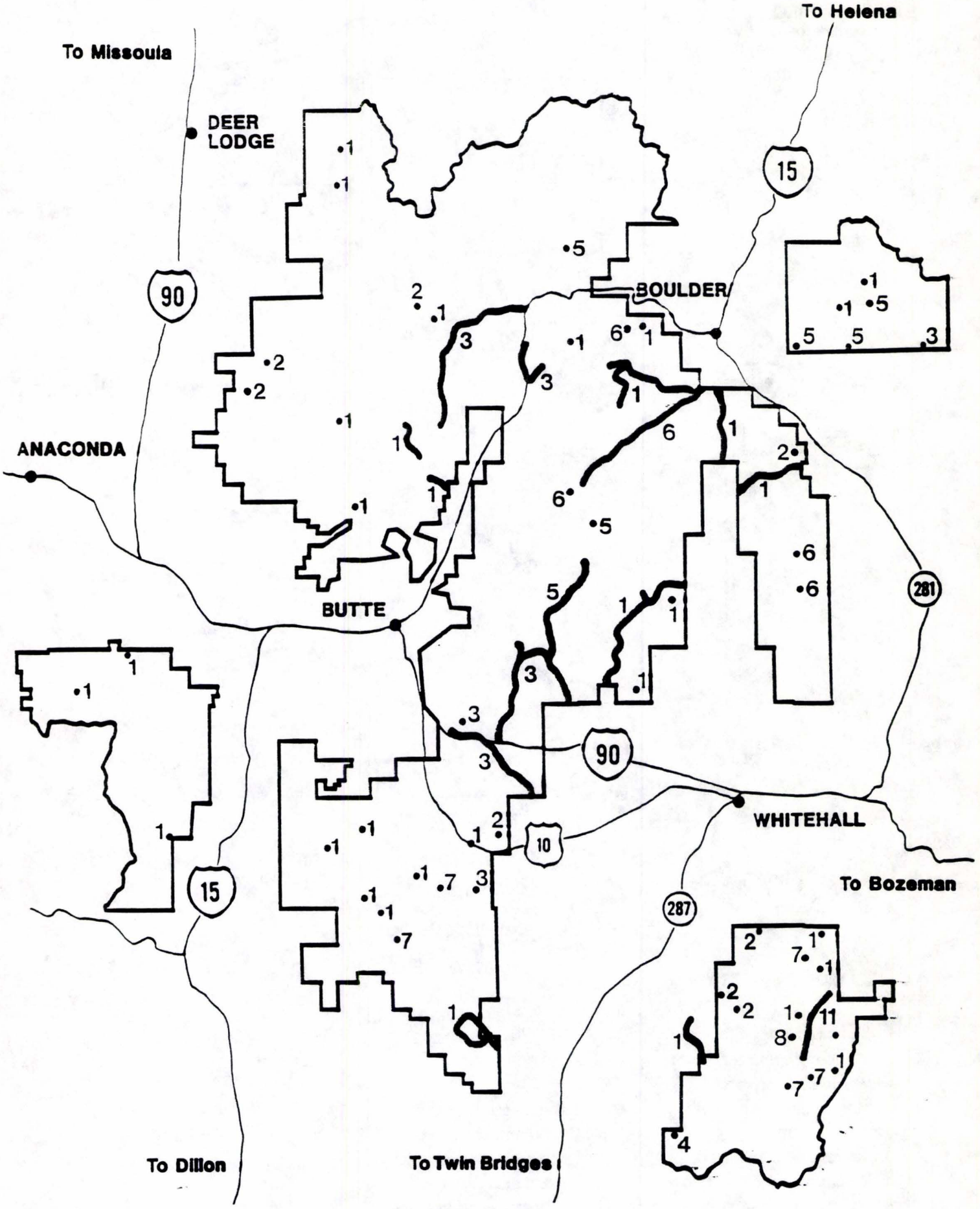


LEGEND

- • Range or small road projects
- ▬ Large road projects
- 1 Knapweed
- 2 Leafy spurge
- 3 Knapweed & toadflax
- 4 Canadian thistle & knapweed
- 5 Toadflax
- 6 Canadian thistle & toadflax
- 7 Tall larkspur
- 8 Canadian thistle
- 9 Knapweed & musk thistle
- 10 Musk thistle
- 11 3 or more weed species

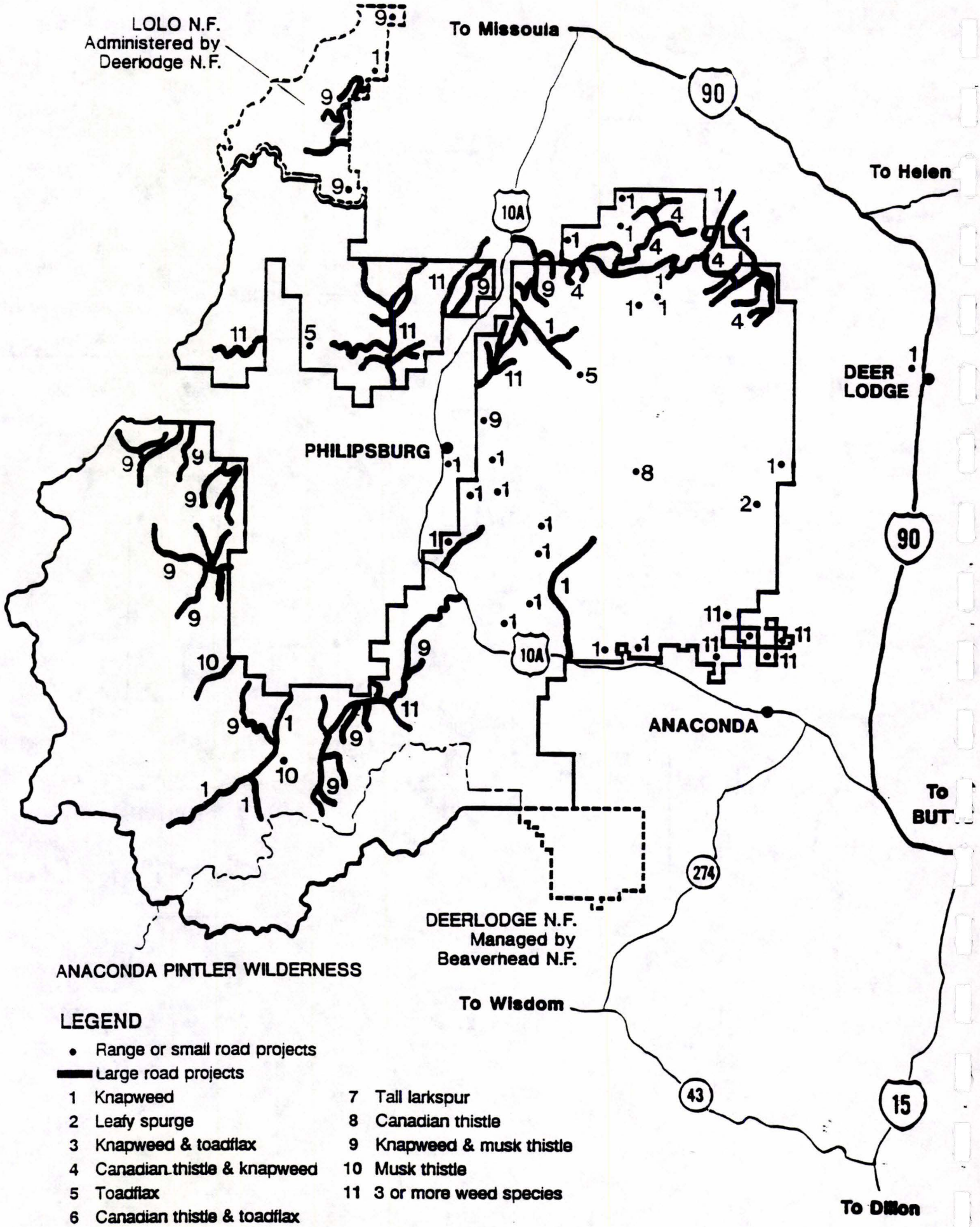
WEED INFESTATIONS PROPOSED FOR TREATMENT

New and Modified Projects



WEED INFESTATIONS PROPOSED FOR TREATMENT

All Projects



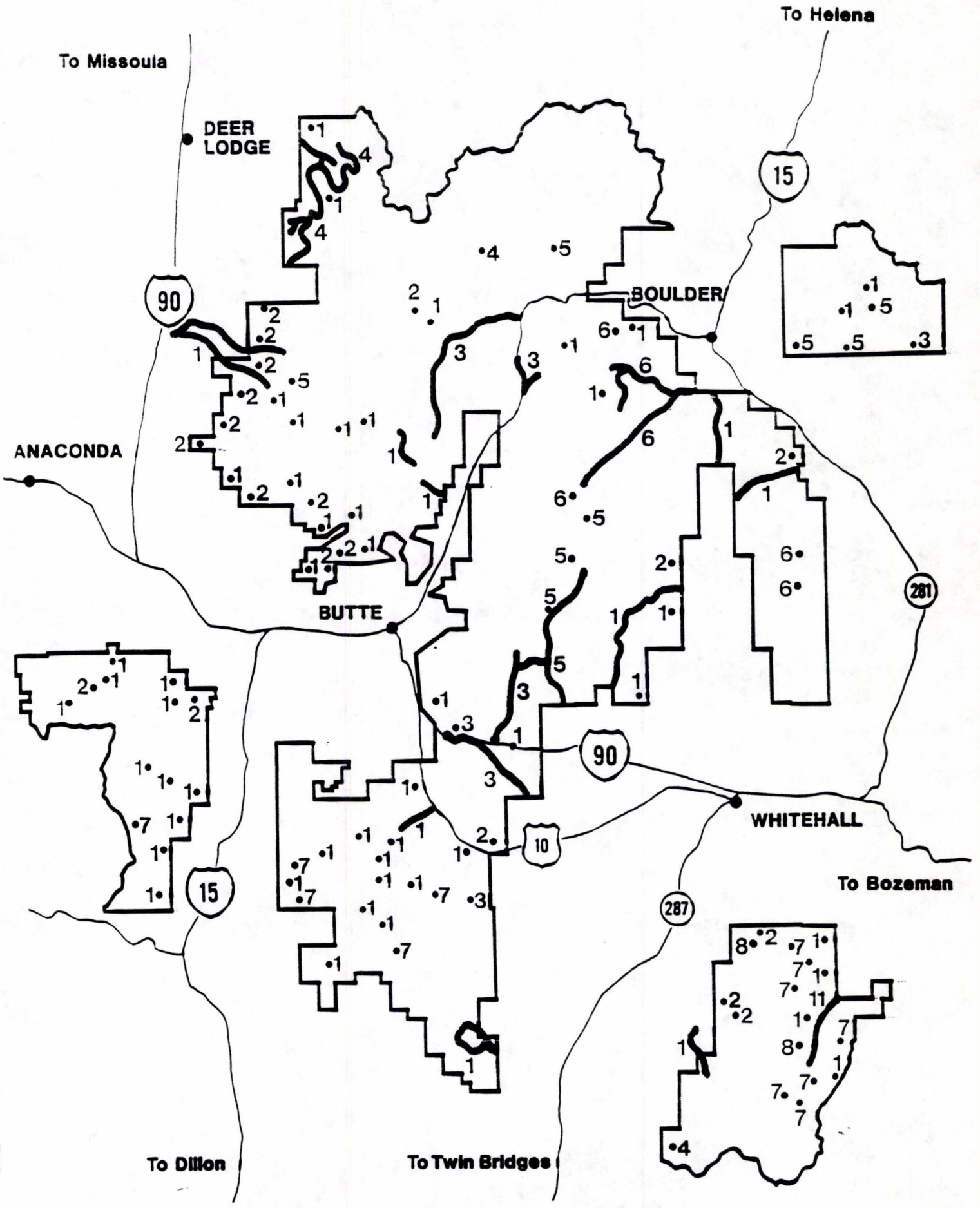
LEGEND

- • Range or small road projects
- ▬ Large road projects

1 Knapweed
2 Leafy spurge
3 Knapweed & toadflax
4 Canadian thistle & knapweed
5 Toadflax
6 Canadian thistle & toadflax
7 Tall larkspur
8 Canadian thistle
9 Knapweed & musk thistle
10 Musk thistle
11 3 or more weed species

WEED INFESTATIONS PROPOSED FOR TREATMENT

All Projects



CHAPTER III

DESCRIPTION OF THE AFFECTED ENVIRONMENT (Page III-1)

PHYSICAL ENVIRONMENT (Page III-1)

Page III-1 - Change paragraph four to read:

Air quality on the Deerlodge National Forest is basically very good with the exception of annual slash burning, occasional forest and range wildfires and dust originating from native soil roads.

BIOLOGICAL ENVIRONMENT (Page III-2)

Vegetation (Page III-2)

Substitute beginning at the top of page III-3.

Noxious weeds to be treated include knapweed, leafy spurge, toadflax, thistle, and whitetop. These plants are found on a wide range of sites but they are usually associated with soil disturbance. Tall larkspur, a poisonous plant targeted for treatment, is most often found on deep, moist, rich soils.

The Deerlodge National Forest has approximately 4,091 acres of noxious weeds and 100 acres of poisonous plants. Spotted knapweed is the most abundant and wide spread of the targeted weeds. The area each weed infests is summarized in the following table. Note, the summed values exceed 4,191 acres because some infested areas have 2, 3 or more weed species.

Table III-1 - Infested Weed Areas by Species

Weed	Total Acres
Knapweed	2,533
Thistle (Canadian & Musk)	1,242
Leafy Spurge	1,115
Toadflax (Common & Dalmation)	232
Tall Larkspur (poisonous plant)	100
White top	10
Houndstongue & Tansy	9

To date no plant species found on the Forest have been listed as threatened or endangered by either the State of Montana or by the U. S. Fish and Wildlife Service. Seven species have been listed as Sensitive by a task force of Forest Service, Natural Heritage, Consulting Botanists, and U.S. Fish and Wildlife Service personnel as they developed a list of sensitive plant species for Montana. These same seven species have been designated as endangered in Montana by The Nature Conservancy. They are listed in Table III-2 on the next page.

Table III-2 - Sensitive Plant Species

Saussurea weberi	(Weber's sawwort)
Botrychium paradoxum	(peculiar moonwort)
Saxifraga tempestiva	(storm saxifrage)
Phlox kelseyi var. missoulensis	(Missoula phlox)
Lesquerella carinata	(keeled bladderpod)
Claytonia lanceolata var. flava	(yellow springbeauty)
Juncus Hallii	(Hall's rush)

Of the seven species listed, only four are known to occur within the area proposed to be treated. Missoula phlox and keeled bladderpod have both been found in the West Fork Buttes area, an area with spotted knapweed treatment proposed. Hall's rush has been found at the Beal Mine, a proposed project area, which does not presently have weed infestations. Yellow springbeauty has been found in the upper Boulder River and near Mount Humbug south of Butte, the latter an area with a tall larkspur project proposed.

Livestock (Page III-3)

No change.

Wildlife (Page III-4)

No change.

Big Game (Page III-4)

Substitute the following narrative and table beginning with the second paragraph

The Forest contains a total of 109,937 acres of forage-producing winter range for elk or 9 percent of our land base. There are currently 2,966 acres of elk winter range infested with noxious weeds or 2.7 percent of the winter range. The capacity of the 109,937 forage-producing acres is 3,951 elk per year. The current level of infestation has reduced the Forest capacity to support elk by 60 animals. Table III-3, on the next page, displays the infested area on elk winter range by District and weed species.

Table III-3 - Winter Range Area Infested by Noxious Weed Species.

Ranger District	Spotted Knapweed	Toadflax	Leafy Spurge	Thistle	Total
Deer Lodge	819	1	1002	245	2067
Jefferson	150	54	9	1	214
Philipsburg	553	12	0	40	605
Butte	78	0	2	0	80
Totals	1600	67	1013	286	2966

Small Game Species (Page III-4)

No change.

Nongame Species (Page III-5)

Substitute the following for the last paragraph.

Roadside vegetation provides nesting areas and escape cover for many non-game animals and birds. Road gravels are utilized by many bird species to aid in digestion of their food. Weeds infest 1,104 acres along 510 miles of rights-of-way on railroads, BPA access roads, and Forest access roads. The average area infested per mile is 2.2 acres.

In total 55 miles of BPA power line cross National Forest lands. Of this total about 17 miles are infested with noxious weeds. The 145 acres of noxious weeds associated with the BPA power line include tower and work sites and some segments of line clearing.

Threatened and Endangered Species (Page III-5)

No change.

Fisheries (Page III-6)

No change.

CULTURAL RESOURCES (Page III-6)

No change.

RECREATION AND VISUAL RESOURCES (page III-7)

Substitute the following for the third paragraph.

Public recreation is concentrated at sites designed and constructed specifically to accomodate a wide variety of uses. The Deerlodge Forest presently has or soon will have 23 campgrounds, 11 picnic areas, 8 boat launches, 1 ski area, and 9 other sites developed for public use. In 1986 the Forest supported 270,000 Recreation Visitor Days (RVD's) at developed

sites. Dispersed activities such as wilderness hiking, hunting, fishing, camping, and picnicing accounted for an additional 804,000 RVD's.

WILDERNESS AND SPECIAL AREAS (Page III-7)

No change.

SOCIAL AND ECONOMIC ENVIRONMENT (Page III-7)

No change.

CHAPTER IV

ENVIRONMENTAL CONSEQUENCES (Page IV-1)

AIR QUALITY IMPACTS (Page IV-1)

No change.

SOIL IMPACTS (Page IV-1)

Drop the last sentence in the second paragraph under Soil Impacts.

Insert between the second and third paragraph:

> A recent study by Montana State University (Lacey et. al, 1988) demonstrated that three times more soil erosion occurred on knapweed infested sites than adjacent uninfested rangeland. Under the No Action alternative, knapweed density could increase to the point where soil loss over a period of time would significantly reduce soil productivity. This impact would not be significant under Alternatives 2 and 3 because knapweed infestations would be reduced in size and density.

WATER RESOURCE IMPACTS (Page IV-2)

Surface Water (Page IV-2)

Add after the last paragraph.

> This analysis includes projects with herbicide application in the Rock Creek drainage west of Philipsburg. Rock Creek is a Blue Ribbon Trout Stream. The management constraints listed in Appendix C, 1987 EIS, are adequate to prevent impacts on water quality in Rock Creek as well as other streams on the Deerlodge National Forest. However, additional precautions, including monitoring of herbicide applications, will be taken in Rock Creek to assure that impacts do not occur. These are discussed in the fisheries section on page IV-7 and have been added to Appendix C at the end of this supplement.

Ground Water (Page IV-2)

Substitute the following paragraph for the first paragraph at the top of page IV-3.

> Measurements of 2-4-D concentrations in sandy soils indicate that the herbicide moved only 4-8 inches into the soil profile (Stewart and Gaul 1977). Picloram has not been found to move more than 1 foot into the soil profile when applied at rates of 1 pound per acre or less (USDA 1984). Picloram application rates of 1 pound per acre or less are proposed for 2,069 acres under Alternative 2. Picloram application rates of 1.5 and 2 pounds per acre are proposed for 64 acres and 136 acres respectively on projects that vary from 0.75 acres to 50 acres. Based upon research cited above, the scheduled application rates should present no threat to ground water.

VEGETATION IMPACTS (Page IV-3)

No Action (Alternative 1) (Page IV-3)

Substitute the following for paragraphs 1-5 on page IV-3.

Noxious weeds will continue to spread throughout the Forest. It appears that knapweed has been spreading in Montana at an annual rate of 27 percent since 1920 (Montana State University, October 1983). At this rate, Deerlodge National Forest lands infested by spotted knapweed will increase from approximately 2,497 acres in the spring of 1988 to approximately 27,256 acres by the fall of 1997 (see Appendix H).

Spread of Leafy Spurge is estimated to be 12 percent per year (Lewistown District, Bureau of Land Management, 1985). At this rate, Deerlodge Forest lands infested by Leafy Spurge will increase from 1,115 acres in the spring of 1988 to 3,463 acres by the fall of 1997.

Larkspur spread rates are unknown, however, we can assume it will continue to increase at a rather slow rate.

Thistle and toadflax are estimated to spread at about 4 percent per year (Lewis and Clark National Forest, March, 1986). With this projected rate of spread the 469 acres of toadflax and thistle, free of knapweed, spurge and other more competitive weeds, will increase to 694 acres by 1997.

In summary, under this Alternative the National Forest lands presently infested by these noxious weeds is projected to increase from 4,081 acres in 1988 to 31,413 acres in 1997, more than seven and one half times the current level.

Herbicide Use (Alternative 2) (Page IV-4)

Insert between paragraphs 2 and 3 on page IV-4.

Native Americans and others collect wild food and medicinal plants on National Forests. As discussed above, broadleaved plants used for these purposes will be killed by the herbicide. However, only small areas of vegetative communities are to be sprayed and these communities normally occur at many other locations on the Forest where they will not be sprayed. In addition, many of the plants of interest are not found on sites where noxious weeds occur. Therefore, the impact of this Alternative on wild food and medicinal plants will be minimal. The human health impacts of sprayed wild food are discussed beginning on page IV-14 of the 1987 EIS and page IV-9 of this Supplement.

Substitute the following for paragraphs 4-6 on page IV-4.

The 100 acres of tall larkspur would be controlled under this Alternative.

Under this Alternative, cultural control methods would be used only where there are restrictions on the use of chemicals, i.e., close to water. The

total area scheduled for treatment with herbicides is approximately 2,330 acres, including the new projects in the Rock Creek drainage and elsewhere on the Forest addressed by this Supplement.

Biological control will be utilized on 1,830 acres of noxious weeds to reduce the spread rate until more effective control methods can be applied. Present biological agents have only limited ability to control weed infestations.

Hand Grubbing (Alternative 3) (Page IV-4)

No change.

Untreated Areas (Alternatives 2 and 3) (Page IV-5)

Drop.

Threatened and Endangered Plants (Page IV-5)

Substitute the following for the paragraph called "Threatened and Endangered Plants" on page IV-5.

Sensitive Plant Species

No officially listed threatened or endangered plant species have been identified on the Forest. Missoula phlox (Phlox kelseyi var. missoulensis)) and keeled bladderpod (Lesquerella carinata) have been identified in the West Fork Buttes Vicinity, and Hall's rush (Juncus hallii) has been identified near the Beal Mine. Yellow springbeauty (Claytonia lanceolata var. flava) has been located in the upper Boulder River and near Mount Humbug south of Butte. The location near Mount Humbug is within a tall larkspur project area. All of these plants are classified as sensitive species by the Northern Region. Any of these plants found near or within the boundaries of a weed control project will be protected. Under the No Action Alternative, these plants could be displaced by weeds.

ANIMAL IMPACTS (Page IV-5)

Livestock (Page IV-5)

Substitute the following for the first paragraph.

Chemicals are scheduled to be applied at rates low enough that effects upon livestock will be insignificant. Animals that do consume forage treated with picloram and/or 2-4-D cannot be slaughtered for a period of 3 to 7 days respectively following ingestion of these chemicals. Most permitted livestock will be grazing on the National Forest during chemical use periods but the time span between scheduled spraying and livestock sales for slaughter is usually several weeks to 2 months which will provide adequate time for elimination of any chemicals ingested during forage consumption.

Wildlife (Page IV-5)

No Action (Alternative 1) (Page IV-5)

No change.

Herbicide Use (Alternative 2) (Page IV-6)

Substitute on page IV-6.

This alternative has the potential to affect wildlife species both directly and indirectly. The important factors in determining the potential negative effects of herbicide on wildlife are:

1. The total area proposed for treatment.
2. Application methods and rates of application
3. Timing of activities in treated areas.
4. Toxicity of each of the proposed chemicals.

1. Total Area Proposed for Treatment

The Deerlodge National Forest contains a land area of approximately 1,206,556 acres, the majority of which is suitable wildlife habitat. The total area proposed for chemical treatment is 2,332 acres, which is 0.19 percent of the total land area. As another example of the relative impacts, table IV-1 summarizes the proposed treatment areas in terms of big game winter range.

TABLE IV-1 Treated Winter Range by Treatment, Expressed in Acres and Percentage of Total Winter Range Area.

Item	Acres	Percent
Total Winter Range Area	109,937	100.00
Winter Range-Herbicide Treatment	1,181	1.07
Winter Range-Biological and Cultural Treatment	1,785	1.62

The area of infested sites ranges in size from .10 to 1,500 acres with a mean of 20 acres. Of the 204 inventoried infestations, 180 are between .10 and 20 acres and 24 are between 20 and 1,500 acres.

2. Application Methods and Rates of Application:

Application methods can cause different potential effects. This proposal is limited to ground application methods only. Hand spraying of individual plants and truck mounted boom spraying of infested areas were the only application methods considered. This restriction, with appropriate constraints, eliminates most of the adverse impacts associated with aerial spraying. Dermal doses, for example, would be extremely rare from ground application.

The maximum rate of application is 2 pounds of active ingredient per acre. Most projects treated with picloram (Tordon) will be treated at 0.5 pounds per acre. The projected doses at the 2 pounds per acre application rate are far below the LD50's and NOEL's for the representative species listed in Table IV-2.

3. Time of Spraying (Page IV-7)

No change.

4. Toxicity of the Proposed Chemicals (Page IV-7)

No change.

5. Comparison of Potential Winter Range Effects (Page IV-8)

Substitute the following, beginning with the heading at the top of page IV-8.

Effects on Selected Indicator Species

Big Game

Changes in the loss of capability to support elk (expressed as the number lost per year) on winter range are shown below by alternative for selected years. These figures are generated by the model described in Appendix G. The tables in Appendix H contain all of the annual values for the period. The potential loss of big game forage by weed infestations is far more significant than the relatively minor forage loss from herbicide applications.

Table IV-3 Reduction In Capacity to Support Wintering Elk

Alternative	Year 1988	1991	1996	2011
		Number of Elk		
1	72	107	301	3951
2	55	33	5	0
3	61	50	60	348

Alternative 2 returns the winter range to full capacity by the year 2011.

Small Game Species

Blue, ruffed, and Franklins grouse were selected as representative small game species for analysis. They use lower elevations during spring and early summer to raise their young. Eggs or young-of-the-year could get sprayed if nesting

areas are treated at this time. Projects containing this habitat will be delayed until August or late July if they can be effectively treated then. Some projects will have to be treated earlier. Applicators will be instructed to pass over nest sites or young when working on these projects, to the extent it is practicable. If eggs or young are inadvertently sprayed, the dose they receive is unlikely to exceed the NOEL (see Table IV-2)

Nongame Species

Wilsons warbler and the belted kingfisher were selected as indicator species for shrub dominated riparian habitat. The mountain vole was selected as the indicator species for mountain grassland habitat. Small mammals and birds are common in both habitats. The statements above about spring and early summer herbicide applications, as well as the mitigation measures, apply here as well.

Herbicide applications in riparian areas are especially sensitive. In most cases these areas will not be sprayed because they are buffer strips or because label restrictions do not allow herbicide to be applied. Where herbicide is used in riparian areas, shrubs will not be treated.

Again, some individuals may be sprayed but the dose is not expected to be significant. Dermal and oral doses, if they occur, will not bioaccumulate assuming that the available data applies equally to these species. However, most toxicity tests have been done on herbivores and the effect of herbicides on other species groups is much less well-understood.

In summary, the impacts of herbicide use on all wildlife are expected to be minor because of the relatively small areas of weed infested habitat scheduled for treatment, the low toxicity of herbicides used, and the measures identified to reduce exposure.

Grubbing (Alternative 3) (Page IV-8)

No change.

Threatened and Endangered Animals (Page IV-8)

No change.

Fisheries (Page IV-8)

Add to the last paragraph on page IV-8.

> In the Rock Creek drainage 13 projects have water within 500 feet of some part of the project. A total of 113 pounds of tordon are proposed for application on these projects.

Substitute the following sentence for the first sentence of the first paragraph at the top of page IV-9.

> These drainages support good salmonid populations.

Add to the end of the Fisheries section on page IV-10.

The cumulative effects of proposed herbicide projects in three Rock Creek tributaries reduce the safety margin to less than 1.0. The three tributaries are Stoney Creek, Middle Fork of Rock Creek, and Meadow Creek. To maintain the safety margin of 1.0 or greater, the maximum amount of picloram that can be used annually within 500 feet of these streams is 3.5, 30.5 and 4.0 pounds respectively. Therefore, the annual cumulative amount applied in these tributaries within 500 feet of water will be limited to these amounts unless a fisheries biologist determines otherwise.

Some additional measures will be taken in Rock Creek to assure that no impacts to fish occur:

1. All projects in the Rock Creek drainage will be reviewed in detail by the Forest Fisheries Biologist to assure that they have a safety margin of 1.0 or greater.

2. The licensed applicator will be present on the project area any time herbicide is applied in the Rock Creek drainage.

3. Selected streams in the Rock Creek drainage will be monitored before and after herbicide application (see Aquatic Monitoring Plan - Rock Creek, Appendix K).

CULTURAL IMPACTS (Page IV-10)

No change.

VISUAL RESOURCES AND RECREATION IMPACTS (Page IV-10)

Substitute the following narrative and table for the narrative and table on page IV-10.

No Noxious weed control alternative will significantly affect the visual resource or dispersed recreation activities. Weed control projects are proposed along ROW's and on rangelands in the vicinity of the 17 developed recreation sites listed in Table IV-4.

Table IV-4 Recreation Sites in the Vicinity of Weed Control Projects

Basin Canyon	Philipsburg Bay
Copper Creek	Pigeon Creek
Delmoe Lake	Piney
East Fork	Racetrack
Elder Creek	Spillway
Elkhorn	Squaw Rock
Homestake	Stewart Lake
Ladysmith	Upper Warm Springs
Lower Warm Springs	

WILDERNESS AREA IMPACTS (Page IV-11)

No change.

SOCIAL AND ECONOMIC IMPACTS (Page IV-11)

Social Impacts (Page IV-11)

Substitute the following for the first paragraph.

> Because of the public concerns associated with herbicide use, Alternative 2 could have social effects specifically related to this issue. This alternative schedules application of herbicides to approximately 2,330 acres and may be perceived as harmful by those opposed to herbicides.

Economic Impact (Page IV-11)

No change.

Economic Efficiency (Page IV-12)

Substitute the following narrative and tables for those on pages IV-12 and IV-13 beginning with the second paragraph in this section.

> Based upon the present value of the total cost, the following table presents a ranking from best to worst (best equals least cost) of the Alternatives evaluated in this analysis.

Table IV-5 Present Value of the Total Cost, Ranked by Alternative

	Alternative	Present Value Total Cost
2.	Herbicide and Cultural Treat. (all target weed species). 2246 Acres	$ 891,737
1.	No Action (no acres treated).	$ 1,942,584
3.	Cultural Treat (knapweed only). 2497 Acres	$ 4,122,600

A summary of the overall biological and economic effects of each alternative is presented in Table IV-6 on the next page. A description of the components of the model used to compute the biological and economic values is presented in Appendix G. Appendix H contains the output from the model for each alternative and Appendix I contains the results of sensitivity analysis performed on each alternative.

Table IV-6 Economic Summary

Items	Alternatives 1		2		3	
Description	No Action		Tordon 97% 2,4-D 2% Hand Grub 1%		Handgrub (Knapweed Only)	
Acres Treated (Initial)	0		2,246		2,497	
Treatment Cost (per Acre)	$ 0.00		$ 73.73		$419.10	
Selected Values:	1988	2011	1988	2011	1988	2011
Total Weed Acres	4,908	149,763	3,748	7	4,075	18,126
Loss:						
AUM's (Cattle)	457	34,842	341	1	371	1,547
Elk (No. of Elk supported)	72	3,951	55	0	61	348
Cost:						
AUM Loss	$ 171	$ 13,018	$ 128	$ 0	$ 138	$ 578
HVD Loss (Elk)	7,825	426,448	5,928	15	6,536	37,594
Treatment	0	0	165,599	7,594	1,046,493	35,624
Total Cost	$ 7,996	$ 439,465	$171,654	$ 7,609	$1,053,168	$ 73,796
Impact:						
Employment Loss	0.79	49.51	0.60	0.00	0.65	3.37
Income Loss	$21,977	$1,434,280	$16,526	$ 37	$18,086	$ 90,099
Discounted Cost:						
AUM & HVD Loss	$ 1,942,584		$ 18,994		$ 185,720	
Treatment Cost	0		872,743		3,936,880	
Total Cost	$ 1,942,584		$ 891,727		$ 4,122,600	
Discounted Income Loss	$ 5,860,548		$ 50,255		$ 446,826	

HUMAN HEALTH RISK (Page IV-14)

Insert between paragraphs 4 and 5 on page IV-14.

> Several people who experience allergic reactions to herbicides live near the Forest. These people and any others identified in the future will be notified concerning weed control activity that may affect them.

Add to the second paragraph on page IV-15.

> However, any wild food sources that have to be sprayed with herbicide to control associated weeds will be signed for 2 weeks after spraying to further reduce risks.

Page IV-15, fourth sentence of the seventh paragraph.

> Change ".... in Appendix H)" to " ...by E. Monnig, 1986)".

Page IV-16, substitute the following for the last paragraph.

> The possible cumulative and synergistic impacts of Forest Service spraying, in addition to impacts from other spraying, are discussed in Section 2.8 of the Northern Region Risk Analysis (Monnig, 1986). Given the widely scattered nature of these herbicide treatments (2,332 acres treated on a 1.2 million acre National Forest), such effects are not reasonably expected.

CUMULATIVE EFFECTS (Add to the end of Chapter IV on page IV-16.)

Alternative 1, No Action, and Alternative 3, Integrated Weed Control Without Herbicide

These alternatives will have no cumulative effects other than those previously discussed concerning the impacts of continued weed spread.

Alternative 2, Weed Control Including Herbicide Use

This analysis is based on treatment of all projects on the Forest in one year and therefore is an assessment of the cumulative effects on Deerlodge National Forest lands. The cumulative effects of our program and the weed control efforts of other land managers adjacent to the Forest have not been addressed previously. The other programs addressed here are predominantly on private land and are administered by Weed Districts and County Weed Boards, as well as private landowners. Some activity is expected on Bureau of Land Management and State of Montana lands also. The Ranger Districts on the Deerlodge National Forest cooperate and coordinate with administrators of all of these programs.

The potential cumulative effects are 1) elevated herbicide concentrations in streamflows and 2) herbicide doses received both on the Forest and on other ownerships by migrating domestic and wild animals.

The precautions in Appendix C should prevent any herbicide used on the Forest from getting into running water. We have evaluated the worst case cumulative effects of our projects on streamflows within the Forest as discussed on page IV-9 and 10, 1987 EIS and page IV-6 and 7, 1989 supplement. Impacts from these projects are expected to result from the persistent herbicide picloram (Tordon) if it is washed into streams by heavy rainfall. If herbicide from Forest projects does affect a stream, the impact normally will be diluted by inflow from herbicide-free tributaries before the water reaches private land. Also, the effects of projects on the Forest are not expected to be additive to those on private land because in both places the initial runoff that reaches running water will contain the highest herbicide concentrations. By the time water from Forest projects reaches other ownerships the initial runoff from them will have flowed further downstream. This occurrence could lengthen the time organisms are exposed to herbicide affected water, but the increase should be a matter of hours and have little impact.

No cumulative effects on migratory domestic and wild animals are expected because projects on the Forest are widely scattered and total amounts of herbicide are relatively small in any one area. Also about half of the projects are along roads which receive relatively light use. Therefore, there is little potential for animals on the Forest to receive significant doses of herbicide. Another factor to consider is that picloram does not bioaccumulate and 2,4-D does only to a very limited extent. In addition, most animals will remain on the Forest until fall. This further limits the potential for cumulative effects since exposed animals will eliminate the doses received before they move off the Forest.

Some species, such as Wilson's warbler, migrate long distances. They winter from southern California and south Texas to Panama and could be exposed to chemicals along the way. On the Forest they use shrubby riparian areas which are not proposed for treatment.

CHAPTER V

CONSULTATION WITH AGENCIES, ORGANIZATIONS, AND INDIVIDUALS (Page V-1)

Agencies and Organizations That received Copies of the Final EIS Supplement

The folowing agencies and organizations received copies of the final supplement to the 1987 Deerlodge National Forest Noxious Weed Control Program EIS. In addition, copies of the Final Supplement ha
individuals.

AMERICAN WILDERNESS ALLIANCE
DAN HEINZ
127 WEST MAIN
SUITE I
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ANACONDA SPORTSMEN'S CLUB
P. O. BOX 1375
ANACONDA MT 59711

CLARK FORK COALITION
BOX 7593
MISSOULA MT 59807

CONFED. SALISH & KOOTENAI TRIBES
OF THE FLATHEAD RESERVATION
CHAIRMAN, MICHAEL PABLO
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PABLO MT 59855

DEERLODGE FOREST DEFENSE FUND
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BOULDER MT 59632

DEFENDERS OF WILDLIFE
NORTHERN ROCKIES OFFICE
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MISSOULA MT 59801

ELKHORN CITIZENS ORGANIZATION
MARK K. MELOY
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JEFFERSON VALLEY SPORTSMEN ASSOC.
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BOB BALLOU
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CHARLO MT 59824

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NATIONAL WILDLIFE FEDERATION
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12 GARDNER PARK DRIVE
BOZEMAN MT 59715

NATIONAL WILDLIFE FEDERATION
DON ALDRICH
410 WOODWORTH AVENUE
MISSOULA MT 59801

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WILLIAM H. HORVATH
1052 MAIN
STEVENS POINT WI 54481

PINTLAR AUDUBON SOCIETY
DON STOECKER
GEORGETOWN LAKE
ANACONDA MT 59711

POWELL COUNTY SPORTSMEN CLUB
C/O JB'S SPORTING GOODS
101 MILWAUKEE AVE.
DEER LODGE MT 59722

ROCK CREEK ADVISORY COUNCIL
240 NORTH HIGGINS
MISSOULA MT 59801

ROCK CREEK ADVISORY COUNCIL
C/O CAROL FISHER
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FOREST SERVICE
Deerlodge National Forest
Butte, Montana
AUG 19 1988
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Champion
Champion International Corporation

Mr. Frank E. Salomonsen
Forest Supervisor
Deerlodge National Forest
P. O. Box 400
Butte, Montana 59703

August 15, 1988

Dear Mr. Salomonsen:

We fully support your preferred alternative decision in the Draft Supplement to the 1987 Deerlodge National Forest Noxious Weed Control Program Environmental Impact Statement. Alternative two which combines chemical, manual and biological control is clearly the best alternative to deal with the existing noxious weed problems on the forest.

Regarding the method of application when chemicals are to be used, we encourage the Forest Service to use aerial application over manual ground application to lessen human exposure whenever feasible. In our experience, aerial applications generally provide more uniform coverage and more effective control.

We appreciate this opportunity to comment.

Sincerely,

Andy Lukes

Andy Lukes
Clark Fork District Land Manager

lff/dist/salomons.ltr

xc: C. Seeley
J. Mandzak

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Response to Champion

Almost all projects are not feasible to spray with aircraft. They consist of spotty infestations along roads and on rangelands. These scattered, small infestations have been given priority over the fewer, large infestations that could be treated by aircraft. For the near future these large areas are being treated with biological agents to slow their spread. Air application may be used on these areas in the future if environmental analysis indicates that aerial application is the best method.

August 25, 1988

Frank Salomonsen, Forest Supervisor
Deer Lodge National Forest
P. O. Box 400
Butte, MOntanan 59703

Dear Mr. Salomonsen,

Madison County Weed Control support Alternative #2, Integrated Weed Control including Herbicide use. Madison County is an active member of RC & D Range Weed Committee, a concerned entity regarding Noxious Weed Management including the Rock Creek Drainage of the Deer Lodge National Forest. Madison County is also an active member of the Montana Weed Control Association. Therefore, our support for Weed Management extends beyond the boundaries of Madison County.

The County also supports a strong and active preventive program. The key to Weed Control is in Prevention and Public Awareness. These are tools for future reduction of the spread of Noxious Weeds throughout all lands.

In review of the Draft EIS, you listed four (4) issues which were considered, but dropped. I would consider these four issues as critical as any of the sixteen (16) issues that were addressed.

The four issues speak to Prevention, New Chemical, Cost of Business, and Eradication to preserve the integrity of a native ecosystem within a Wilderness Area. These are important issues which look into the future. Why these issues were not considered, in lieu of some of the sixteen escape my view of Public Land Management.

In my view, several of the considered issued are more asinine ~~and~~ then relevant to Noxious Weed Management on National Forest Lands.

Sincerely,

Neil O. Peterson

Neil O. Peterson
Weed Coordinator
Madison County

NP/jt

Response to Neil Peterson

During the analysis we focused on issues that help to select an alternative. Prevention was not discussed further because prevention of new weed infestations is included in all alternatives (see Prevention in Appendix J). New chemical was dropped because clopyralid was not licensed for use on rangeland in Montana when the draft was prepared. It has since been licensed for use. However, picloram (Tordon) is more suitable for the projects we are treating at present. We evaluate all new control methods as we become aware or them and appreciate the help we receive from the public (see #24, Appendix C, pg. C-2).

Cost of doing business refers to the cost of aerial herbicide application versus ground herbicide application and other non-herbicide control methods. We recognize the cost savings associated with aerial spraying, howeveer the nature of most infestations does not permit aerial application. We anticipate use of aircraft in the future when we treat larger, more continuous infestations (See explanation on page I-3).

The wilderness issue was not addressed because we do not have weed infestations in the Anaconda-Pintler Wilderness and have no need to use controls there.

FOREST SERVICE
Deerlodge National F
Butte, Montana
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United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

ER 88/747

OCT 13 1988

Frank Salomonsen, Forest Supervisor
Deerlodge National Forest
P.O. Box 400
Butte, Montana 59703

Dear Mr. Salomonsen:

The Department of the Interior has reviewed the draft supplement to the 1987 Deerlodge National Forest Noxious Weed Control Program-Environmental Impact Statement (Supplement). Overall, we find it to be well prepared. A few inconsistencies and omissions are noted below.

Specific Comments

Page II-7 (map showing weed infestations proposed for treatment).

1 The site designation No. 1, approximately west of Basin, does not appear on the more inclusive map on page II-9. Similarly, the site designations No. 1 east of Deer Lodge on maps II-7 and II-9 are not in the same location if they are intended to represent the same treatment sites.

Page III-1.

2 White Top, Houndstongue, and Tansy are identified as weed species within the Deerlodge National Forest. However, the maps on pages II-6 through II-9 do not show where these species are to be treated. The document should indicate in some fashion the location and treatment proposed for these species.

Sincerely,

Robert F. Stewart
Regional Environmental Officer

Response to U.S.Department of Interior

The correction near Basin has been made. The second correction is not necessary - the site designated 1 is included with the road project on the map on page II-9.

Whitetop, houndstongue, and tansy affect only 19 acres and are mixed with other weeds (11 on the map). Whitetop is in English Gulch, north of Anaconda; houndstongue is near McGovern Creek in the Tobacco Roots; tansy is on the South Boulder road in the Tobacco Roots. Details are in Appendix A, project 32, Deer Lodge District in the 1987 EIS; and Appendix A, projects 88-2-16 and 88-2-24 in the 1988 supplement.

Sept 12-88

Rec'd 9/15/88

In reference to your interest in my comments - I am sending you the following news clips from various magazines & newspapers.

Society is becoming more & more aware of the danger of toxic chemicals to our environment - no one seems to know what it will end or what to do about it. Hopefully some day soon we will find a solution!

In the meantime I realize we must do something about our weed problem.

Have you any knowledge on the work done at MSU with amino acids to kill knapweed? Sounds to me like a more natural & less harmful way to get rid of weeds. Naturally!!

Sincerely
Helen V. Cassidy
Majville Star Rte. Livingston 59845

Response to Helen Cassidy

We are aware of this work, however, it is still in the experimental stage of development.

FOREST SERVICE
Deerlodge National Forest
Butte, Montana
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Dean Strand
1949 Rock Creek Road
Philipsburg, Montana 59858
Oct 3, 1988

Frank Salmonsen, Forest Supervisor
Deerlodge National Forest
Box 400
Butte, Montana, 59703

Dear Mr. Salomonsen:

Subject: Draft Supplement to the 1987 Deerlodge National Forest Noxious Weed Control Program EIS

Alternate 2 is by far the best alternate in my opinion. Anything done to control spotted knapweed is better than allowing it to spread. One look around the Bitteroot Valley to see the destruction to the enviwonment by an imported invader with no natural control should be convincing that something needs to be done to save our National Forest, and soon.

It is very discouraging to try to control knapweed on your own private land, to have the county try their best, and then to have knapweed going to seed to reinvest your property from nearby public lands.

The largest and most potentially dangerous patch of knapweed on the National Forest in my area and not included in the Draft Supplement is in Sections 26 and 35, T 6N, R 16W across the road from the Youth Camp (formerly West Fork Ranger Station) west to the west Fork of Rock Creek Bridge.

Yours truly,

Dean Strand

Response to Dean Strand

This area is included in project 88-3-17 (see Appendix A).

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
Atlanta GA 30333

October 6, 1988

Frank E. Salomonsen
Forest Supervisor
Deerlodge National Forest
P.O. Box 400
Butte, MT 59703

Dear Mr. Salomonsen:

We have reviewed the Draft Supplement to the Final Environmental Impact Statement (DEIS) for "The Deerlodge National Forest Noxious Weed Control Program." We are responding on behalf of the U.S. Public Health Service. We noted that the this supplement considers the exposure of persons adjacent to herbicide spraying operations who are allergic to herbicides. We found the proposed mitigation measure was that allergic persons "will be notified concerning weed control activity that may affect them." This proposed mitigation could be strengthened by including numbers of persons to be notified, methods of notification, and actions proposed if allergic persons cannot be reached.

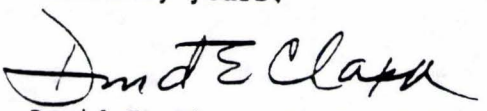
1

We wish to emphasize the need for an effective exposure reduction program for workers who apply herbicides. Clearly, to effectively reduce herbicide exposures the Forest Service should establish programs insuring the proper selection, donning, and use of personal protective equipment (PPE). Rubber gloves, for example, are typically recommended for reducing exposures. Such gloves, however, if carelessly used can, themselves, become potential exposure sources if saturated with herbicide then donned by an unsuspecting worker. Clothing which is not inspected for contamination and laundered can theoretically increase exposures to a careless worker. The Final EIS for this project should include a discussion of appropriate work practices including proper use, and decontamination of supplied PPE (respirators and clothing). Work practices should include demonstrations and training on the use of PPE at the beginning of the herbicide application period and at frequent intervals throughout the application period (including inspections for proper use, wear, contamination, etc.). Demonstration and training should be conducted at actual work sites to reflect representative working conditions. Supervisors should strictly enforce the proper use of PPE at all times.

2

Thank you for the opportunity to review this supplement to the Final EIS. We hope that our suggestions are useful in minimizing worker exposures to herbicides at field locations. Please include us on your mailing list for the Final EIS for this project as well other NEPA-related documents on any future BLM projects with potential human health hazards.

Sincerely yours,



David E. Clapp, Ph.D., P.E., CIH
Environmental Health Scientist
Special Programs Group
Center for Environmental Health
and Injury Control

Response to U.S. Department of Health and Human Services

1. At present, only four people allergic to herbicide have been identified. They will be made aware of the entire annual program prior to any spraying and will be asked to identify projects that are likely to affect them. They will be notified of our intent to spray these projects one week before they are sprayed.

2. The exposure reduction program for workers that is suggested in your letter is contained in Forest Service Manuals and Handbooks. The details are contained in the safety plans, job hazard analysis, and training routinely carried out for projects such as herbicide application. In addition, the IPM Work Group and the on-site supervisor will monitor the work crews to assure that safety precautions are observed.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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October 13, 1988

Frank Salomonsen
Forest Supervisor
Deerlodge National Forest
P.O. Box 400
Butte, Montana 59703

Re: Deerlodge National Forest
Noxious Weed Control Program,
Draft Environmental Impact
Statement Supplement.

Dear Mr. Salomonsen:

In accordance with our responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act, the Environmental Protection Agency's Region VIII Montana Office (EPA) has reviewed the referenced draft environmental impact statement (EIS) supplement.

The proposed increase in treated acreage by itself should not result in a substantially greater environmental risk than the program outlined in the May 1987 final EIS. However, this proposal has the same deficiencies found in most resource management EIS's .

One reoccurring deficiency is the lack of a detailed environmental affects monitoring program. Confidence in the ability of the managing agency to adequately detect and react to adverse environmental impacts is seriously undermined by the lack of a specific monitoring program. Key elements missing from most monitoring plans are: 1) sampling and analytical protocol, 2) criteria for site selection and sampling frequency, 3) a well defined feedback loop to ensure that monitoring results are appropriately incorporated in management decisions. This draft supplemental EIS alludes to these elements in Appendix J. However, it does not provide or reference guidance to assure mitigation of potentially significant environmental impacts.

8

The second deficiency is absence of discussions of cumulative effects. This discussion is required under 40 CFR 1508.7. It is particularly important in assessing potential impacts to migratory species. Potential exposure to multiple applications of the same chemical or a variety of compounds used by various private or

1

government treatment programs should be identified. These discussions should include avian species, as well as all major or significant populations of wildlife and domestic livestock.

The issues noted here are similar to the majority of this type of EIS which EPA reviews. It may be that there are basic differences in interpretation and approach in addressing the requirements of the National Environmental Policy Act (NEPA). To assist in our review, I request copies of the current Forest Service guidance used in Region One to develop EIS's or Environmental Assessments (EAs) in compliance with NEPA. Additional detailed comments on this draft supplemental EIS are attached.

In accordance with the criteria that EPA has established for rating draft environmental impact statements, we have rated this draft EIS as category EC-2 (environmental concerns - insufficient information). This rating is based on the lack of specific monitoring plans, lack of cumulative effects discussions, and the limited range of wildlife species included in the assessment. If you need any further EPA assistance, please feel free to contact Lee Shanklin of my staff at (406) 449-5486 or FTS 585-5486.

Sincerely,

John F. Wardell
Director, Montana Office

Attachment

Subject: Specific Comments on the Draft Supplemental EIS for the Deerlodge National Forest Noxious Weed Control Plan

Reviewer: Lee Shanklin

1. Cumulative impacts should be addressed, including 1) exposure of migratory wildlife to applications by other than Forest Service programs, i.e., private, county, BPA, etc.; 2) the range of pesticides used in addition to those proposed in this EIS. While little synergistic data is available, this potential exposure should be documented.

2. Both the supplement and the final EIS repeatedly mention cattle deaths from poisonous plants to support the selection of the preferred alternative. There does not appear to be any documentation of the history of cattle deaths for the area addressed in this EIS. If the concern over toxic deaths is a valid justification, then it should be substantiated in the document. If there is a valid economic impact from loss of cattle due to ingestion of poisonous plants, it should be reflected in the economic analysis.

3(a). The description of the affected environment includes only the current weed and pesticide treatment status relative to each heading. The status of all environmental factors which may potentially be affected should be addressed. In the case of wildlife, the number, type and distribution of animals within the forest should be presented. While the potential carrying capacity of the area is one factor to consider, actual habitat utilization is equally important. This information may highlight other limiting factors besides weed infestation.

3(b). What portion of the current and predicted elk population for the forest do the figures in Table IV-3 represent? What is the status of deer or other economically important species besides elk?

3(c). The status of avian species including waterfowl and upland game birds should be addressed in both the affected environment and environmental consequences section. Cumulative effects should be addressed.

4. As stated in comment 1, the pattern of movement of migratory wildlife may also be important in assuming cumulative effects to wildlife (and also domestic livestock). If there is a potential for wildlife to be exposed to multiple applications at various points in their route of migration or to a number of different compounds, then this potential should be identified as part of the required (40 CFR 1508.7) assessment of cumulative effects.

5. Do the models used to predict the spread of these noxious weeds take into account any habitat requirements or limitations besides elevation? How site specific is the model? In applying this model, was the suitability of sites for weed propagation within the Deerlodge National Forest taken into account in estimating acreage?

6. In the 5/13/88 response to our comments on the DEIS concerning monitoring costs, it was stated that the current costs were insignificant. What level of monitoring does this statement represent? How many monitoring samples, of what types, are typically collected for this forest? What are the analytical parameters and methodologies employed in these samples? Where are these analyses typically performed?

7. As noted in our comments of 4/20/87 on the DEIS, Appendix C, Item 7, stated that "the forest will prepare a program overview document ..." Our questions concerning the content of this document were primarily referred to other sections of the DEIS. In the Supplemental EIS, Appendix C does not contain any reference to such a document. This is disappointing since the EIS does not address the specifics of the monitoring program in sufficient detail, nor does it illustrate the feedback mechanism to insure that monitoring results are effectively incorporated into management decisions.

8 In discussing monitoring, item 3 refers the reader to Appendix J. A number of very positive factors are outlined in this section. However, the detailed information regarding the type and number of environmental samples which will be collected to assess the effects of applying pesticides, and the efficacy of the program is lacking. The criteria for defining when, where and what samples will be collected is also lacking. The sampling and analytical methodologies or appropriate references are lacking. Additional comments concerning Appendix J are listed below:

9 Page J-2, B,1,a - How will this rehabilitation be ensured? References for the criteria for rehabilitation are needed. Is this activity funding dependent? If so, how will adequate rehabilitation be guaranteed?

10 Page J-3, C,1,e - The use of a computer assisted inventory and tracking system should be a very effective tool for monitoring the program of the treatment progress. However, some detailed explanation should be provided for this outline. For example, item e(2), what conditions are being documented, weed status, soils, water, environmental effects? Item e(3), what results are being monitored and how? Does this include

assessment of environmental monitoring as part of the program evaluation?

11 Items e(4&5), what are the criteria for setting priorities and distributing funds?

12 Page J-4, C,1,g(1) - What are the criteria for determining the location of the transects, and the number and the type of samples to be collected? How, when and where will samples be analyzed? What are the anticipated costs of environmental monitoring?

13 Page J-4, C,1,g(2) - What are the criteria for refining herbicide application rates? Are environmental effects monitoring results included in this process?

Response to Environmental Protection Agency

1. The discussion has been added on pages IV-10 and 11.

2. The Districts that have pastures with tall larkspur infestations have dealt with the problem by adjusting grazing system schedules. Schedule adjustments affect other aspects of range management including forage use and range condition. Attempts to graze the infested pastures in the spring have led to the loss of 7 head of cattle in 1987 and 1 in 1988 due to poisoning by larkspur. We feel there are economic effects but they are difficult to evaluate quantitatively because of the complexity, i.e. subtle effects of changes in the grazing system, costs of riders to herd cattle away from infested areas etc. Also the economic impacts on 100 acres are not likely to change the overall economics analysis of alternatives based on the larger, more serious noxious weed infestations.

3a. We feel all pertinent environmental factors have been addressed. In the case of wildlife, selected species were used to represent the array of species on the Forest. We recognize that other factors affect the carrying capacity for wildlife on the Forest. However, we have an obligation to maintain potential carrying capacity to the extent that we can to provide the capacity if other limiting factors are eliminated or to provide that capacity to alternate species. Proper land management requires maintenance of potential productivity.

3b. In the Forest Plan we estimate about 3100 wintering elk on the Forest currently and expect to provide habitat for about 3900 wintering elk under the selected alternative.

The estimated number of elk the Forest will have the capability to support after weed infestations are taken into account are listed in Appendix H. The number of elk are expressed as percentages of the Forest Plan level (3951 head) on pages H-2, H-4, and H-6 by alternative.

3c. See page III-5, 1987 EIS.

4. Discussion has been added - see page IV-11.

5. The model is purposely very general. Grassland and non-commercial forest below 6500 feet in elevation are the requirements used to select site suitability for weed spread. However, vegetation type and elevation are very important site characteristics. The vegetative types and elevation sited above were chosen because these sites are suitable for weed propagation. See Appendix G, 1987 EIS.

6. The response states that "monitoring costs are not very significant compared to other costs". Presently, these costs are about three percent of the annual weed control budget. These costs include the following:

    1. Line intercept transects to determine effectiveness of herbicide treatment for knapweed and leafy spurge, and of hand grubbing knapweed. (by Deerlodge Forest personnel)

2. Analysis of soil profile to determine distribution of herbicide one year after application. (Analytical Lab - MSU)

3. Water quality monitoring in Rock Creek. (Fred Mangum, Aquatic Ecosystem Analysis Laboratory)

4. IPM Work Group and District weed crew supervisor monitoring of spray crew operations and effectiveness. (Deerlodge personnel)

Some monitoring is done by spray crews while applying herbicide so in reality some monitoring is included with the costs for herbicide treatment.

7. Appendix C does not contain a reference to the program overview document because this document is developed in Appendix J. Many of the items in Appendix J have been initiated and action plans for most of the rest are in the process of being developed. The Education and Awareness Section has been implemented as has the Prevention Program with the exception of item B.1.b. All of the items in the Control Program section are being done now, such as the computer assisted inventory and tracking system (item C.1.e). Many of these, including the computerized inventory, are being revised to better achieve the objectives outlined in Appendix J.

8. Monitoring items that are being accomplished now are listed in #6 above. The monitoring plan for Rock Creek is included in Appendix K. The overall monitoring plan is being revised and expanded as one of the action plans identified in the Management Guidelines (Appendix J, C.1.g.).

9. Most rehabilitation proposals call for 50 percent canopy cover of desirable plant species. Rehabilitation is included as part of all ground disturbing activities and the funding is included as part of the project. Followup seeding is called for on projects that are difficult to rehab. Also, seeding is being done as part of road maintenance.

10. The computerized inventory contains the items listed in Appendix A plus areas of big game habitat within the project area. Information on soils, habitat types etc. is available but has not been entered into the database at this time. The items being monitored at present are listed in #8 above and they are used to evaluate the effectiveness of the program as well as the environmental impacts.

11. See page II-3.

12. These details vary by the type of monitoring being done and are included in the monitoring plan under revision now. Upon completion, a copy will be mailed to EPA and to anyone else who requests a copy.

13. Herbicide effectiveness monitoring and research results are used to adjust application rates to the lowest levels that remain effective. Environmental effects monitoring normally will not affect rates of application but will affect the total amount of herbicide applied and therefore the amount of area treated.

CHAPTER VI

LIST OF PREPARERS

Core Team

Substitute the following names for those in the 1987 EIS.

Dave Ruppert (Soil Scientist)

Howard Challinor (Supervisory Forester)

Tom Griffith (Resource Coordinator)

John Joy (Ecologist)

Greg Munther (Fishery Biologist)

Betsy Follman (Wildlife Biologist)

Rick Swanson (Fishery Biologist)

Support Group

No changes.

GLOSSARY (Page G-1)

Insert the following between the fourth and fifth definition on page G-2 of the 1987 EIS.

Cultural Treatment: Weed control by hand grubbing, mowing, cutting, burning, and flooding weed infestations.

Insert the following between the fifth and sixth definition on page G-2 of the 1987 EIS.

Developed Recreation Sites: Any area which has been improved for public use that includes any parking, sanitation facilities, tables, fire places, and developed water.

Insert the following between the first and second definition on page G-6 of the 1987 EIS.

P.U.P.: Abbreviation for Pesticide Use Proposal.

REFERENCES (Page R-1)

Insert between the fourth and fifth reference on page R-1.

Lacey, J.R., C.B.Marlow, and J.R.Lane. 1988.
Influence of Spotted Knapweed on Surface Runoff and Sediment Production. Final Project Report (Noxious Weed Trust Fund, MDA 87-11). Unpublished Report.

APPENDIX A

Pesticide Use Proposals for Projects Modified or Added in 1988

The format of the Pesticide Use Proposals has changed slightly. The District name is no longer in the heading at the top of each page. The major change in the body of the form is that the Chemical Name is the only item under Pesticide Solution Mix that was retained in the new format.

The Project Number incorporates the date the project was added or modified, the District number, and the project number. The year is the first two digits of the project number, i.e. 88 = 1988. The District number is the next digit, i.e. 2 = D-2 = Jefferson District. The numbers 1 ,2, 3, and 4 are the Deer Lodge, Jefferson, Philipsburg, and Butte District, respectively. The next 1 to 3 digits are the project number and they correspond to the project numbers listed in the 1987 Pesticide Use Proposals. The letters included in some project numbers are subdivisions of the project.

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/80

PROJECT NUMBER NAME LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TAR-GET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST WATER Dist. miles	Width feet	Depth feet	Veloc ft/s	BEST DENCI miles
88- 1- 2 BARREL SPRINGS AREA Sec. 13 , T 5N, R 9W	RANGE	4.00	0.00	EUES	TORDON 22K	1.00 0.00	4.00 0.00	0.090	0.0	0.0	0.0	4.000
		LESS THAN 1/10 AC. WITHIN 500 FT OF SEEP. CHG 2 AC TO 4 AC.										
88- 1- 3A ENCLOSURE AREA Sec. 6 , T 5N, R 8W	RANGE	1.00	0.00	EUES	TORDON 22K	1.00 0.00	1.00 0.00	0.090	3.0	0.6	5.0	4.000
		DRY COTTONWOOD CREEK IS STREAM NEAR PROJECT. CHG.5 AC TO 1 AC.										
88- 1- 3B ENCLOSURE AREA Sec. 6 , T 5N, R 8W	RANGE	1.00	0.00	CEMA	TORDON 22K	0.25 0.00	0.00 0.00	0.090	3.0	0.6	5.0	4.000
		DRY COTTONWOOD CREEK IS STREAM NEAR PROJECT CHG.5 AC TO 1 AC.										
88- 1- 7 DOUGLAS MOUNTAIN Sec. 30 , T 9N, R 12W	RANGE	8.00	0.00	CEMA	TORDON 22K	0.25 0.00	2.00 0.00	0.250	4.0	0.5	5.0	4.000
		NEAREST WATER IS DOUGLAS CREEK. GALL FLY PLANTED ALSO. CHG 3 AC TO 8 AC.										
88- 1- 10A MOUNT PRINCETON ROAD Sec. 5 , T 8N, R 12W	ROW	5.00	4.00	CEMA	TORDON 22K	0.25 0.00	0.00 0.00	0.090	2.0	0.3	10.0	6.000
		NEAREST WATER IS SOUTH FK DOUGLAS CR.										
88- 1- 10B MOUNT PRINCETON ROAD Sec. 5 , T 8N, R 12W	ROW	5.00	4.00	CIAR	TORDON 22K	1.00 0.00	5.00 0.00	0.090	2.0	0.3	10.0	6.000
		NEAREST WATER IS SOUTH FK DOUGLAS CR. CHG RATE1 FR .25 TO 1.										
88- 1- 12 DUNKLEBERG RIDGE Sec. 15 , T 9N, R 12W	RANGE	15.00	0.00	CEMA	TORDON 22K	0.25 0.00	3.75 0.00	0.250	0.0	0.0	0.0	1.500
		NEAREST WATER IS A SEEP. OLD MINING CABIN ON SITE. DROP BEADS & COMBINE A&B.										
88- 1- 13 JACKSON PARK Sec. 14 , T 9N, R 12W	RANGE	7.00	0.00	CEMA	TORDON 22K	0.25 0.00	1.75 0.00	0.250	2.0	0.2	5.0	0.250
		FUNGUS RELEASE SITE. DROP BEADS & COMBINE A&B.										
88- 1- 15A WILLOW-PIKES PK CR AREA Sec. 1 , T 8N, R 11W	ROW	20.00	15.00	CEMA	TORDON 22K	0.25 0.00	0.00 0.00	0.010	0.0	0.0	0.0	0.000
		NEAREST WATER IS STREAM CROSSINGS ON PIKES PEAK CR AND WILLOW CR.										
88- 1- 15B WILLOW-PIKES PK CR AREA Sec. 1 , T 8N, R 11W	ROW	20.00	15.00	CIAR	TORDON 22K	1.00 0.00	20.00 0.00	0.010	0.0	0.0	0.0	0.000
		NEAREST WATER IS STREAM CROSSINGS ON PIKES PEAK CR AND WILLOW CR										
88- 1- 21A BALLARD HILL AREA Sec. 33 , T 9N, R 11W	ROW	5.00	5.00	CEMA	TORDON 22K	0.25 0.00	0.00 0.00	0.000	0.0	0.0	0.0	0.000
		STOCK WATER SPRING. (AND PIONEER GULCH CROSSING?)										

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER NAME LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TARGET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST Dist. miles	Width feet	Depth feet	WATER Veloc ft/s	RESI DENCE miles
88- 1- 21B BALLARD HILL AREA Sec. 33 , T 9N, R 11W	ROW	5.00	5.00	CIAR	TORDON 22K	1.00 0.00	5.00 0.00	0.000	0.0	0.0	0.0	0.000
		STOCK WATER SPRING. (AND PIONEER GULCH CROSSING?)										
88- 1- 22 OLSEN RIDGE - BUCK GULCH Sec. 21 , T 5N, R 12W	ROW	9.00	3.50	CEMA	TORDON 22K	0.25 0.00	2.25 0.00	0.090	1.5	0.3	3.0	0.090
		NEAREST WATER IS OLSEN GULCH(FOSTER?). ADDED 1 AC (.5 MI) TO OLD 1987 PROJECT.										
88- 1- 23B LIME QUARRY AREA Sec. 23 , T 5N, R 12W	RANGE	110.00	0.00	CEMA		0.00 0.00	0.00 0.00	0.000	0.0	0.0	0.0	0.250
		GALL FLY RELEASE SITE. HIGH PRIORITY FOR ROOT MINER.										
88- 1- 23C LIME QUARRY AREA Sec. 23 , T 5N, R 12W	RANGE	40.00	0.00	CEMA	TORDON 22K	0.25 0.00	10.00 0.00	0.000	"	"	"	0.250
		40 AC CHG.TO CHEM.TREAT.FOR BUFFER NEXT TO PRIVATE-100 YDS X 1 MI										
88- 1- 34A MIDDLE FK DOUGLAS CREEK Sec. 32 , T 9N, R 12W	ROW	5.00	5.00	CEMA	TORDON 22K	0.25 0.00	0.00 0.00	0.090	3.0	0.5	1.0	5.000
		1/2 ACRE WITHIN 500 FT OF DOUGLAS CREEK OR SEEPS.										
88- 1- 34B MIDDLE FK DOUGLAS CREEK Sec. 32 , T 9N, R 12W	ROW	5.00	5.00	CIAR	TORDON 22K	1.00 0.00	5.00 0.00	0.090	3.0	0.5	1.0	5.000
		1/2 ACRE WITHIN 500 FT OF DOUGLAS CREEK OR SEEPS.										
88- 1- 41 DIRT YARD AT DISTRICT OFF Sec. 28 , T 8N, R 9W	BULL PEN	1.00	0.00	CEMA	TORDON 22K	0.25 0.00	0.25 0.00	0.000	0.0	0.0	0.0	0.020
		NEXT TO USDA OFFICES - NO RESIDENCES. CHG FR 2,4-D TO TORDON.										
88- 1- 42 BIG PARK Sec. 30 , T 7N, R 10W	ROW	2.00	2.00	CEMA	TORDON 22K	0.25 0.00	0.50 0.00	0.250	3.0	0.5	2.0	0.750
88- 1- 43 MIDDLE FK. SALE AREA Sec. 14 , T 7N, R 8W	RANGE	2.00	0.00	CEMA	TORDON 22K	0.25 0.00	0.50 0.00	0.250	5.0	0.8	2.5	2.000
88- 1- 44 WARM SPRINGS RD #170 Sec. 12 , T 5N, R 13W	ROW	17.00	8.50	CEMA	TORDON 22K	0.25 0.00	4.25 0.00	0.009	"	"	"	"
		NEAR 2 CAMPGROUNDS. NEAREST WATER IS WARM SPRINGS CREEK.										

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER / NAME / LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TARGET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST WATER Dist. miles	Width feet	Depth feet	Veloc ft/s	RESIDENCE miles
88- 1- 701 FREEPORT MINE Sec. 3 , T 7N, R 8W	MINE	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	5.00 0.00	0.250	"	"	"	1.500
		NEAREST WATER IS BAGGS CR. TRIB.										
88- 1- 702 MMT MINE - GOLD CREEK Sec. 11 , T 8N, R 12W	MINE	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	50.00 0.00	0.009	"	"	"	7.000
		NEAREST WATER IS GOLD CR.										
88- 1- 703A WILLOW CR MINE Sec. 1 , T 8N, R 11W	MINE	3.50	0.00	CEMA	TORDON 22K	0.25 0.00	0.00 0.00	0.100	1.0	0.1	1.0	0.000
88- 1- 703B WILLOW CR MINE Sec. 1 , T 8N, R 11W	MINE	3.50	0.00	CIAR	TORDON 22K	1.00 0.00	3.50 0.00	0.100	1.0	0.1	1.0	0.000
88- 1- 704 CABLE MINE Sec. 10 , T 5N, R 13W	MINE	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	1.00 0.00	0.009	"	"	"	1.250
88- 1- 705 PIKES PEAK PHOSPHATE MINE Sec. , T 8N, R 11W	MINE	0.10	0.00	CEMA	TORDON 22K	0.25 0.00	0.03 0.00	0.020	"	"	"	"
88- 1- 801A BALLARD HILL (BPA) Sec. 33 , T 9N, R 11W	ROW BPA ROAD	3.60	1.50	CEMA	TORDON 22K	0.50 0.00	0.00 0.00	0.500	3.0	0.5	1.0	2.000
88- 1- 801C BALLARD HILL (BPA) Sec. 33 , T 9N, R 11W	ROW BPA ROAD	3.60	1.50	CIAR	TORDON 22K	1.00 0.00	3.60 0.00	0.500	3.0	0.5	1.0	2.000
88- 1- 801D BALLARD HILL (BPA) Sec. 33 , T 9N, R 11W	LINE	23.20	0.00	CEMA	TORDON 22K	0.50 0.00	0.00 0.00	0.500	3.0	0.5	1.0	2.000
88- 1- 801F BALLARD HILL (BPA) Sec. 33 , T 9N, R 11W	LINE	23.20	0.00	CIAR	TORDON 22K	1.00 0.00	23.20 0.00	0.500	3.0	0.5	1.0	2.000
88- 1- 802A DAVIDSON/MASTER MINE(BPA) Sec. 32 , T 9N, R 11W	ROW BPA ROAD	11.60	4.80	CEMA	TORDON 22K	0.50 0.00	0.00 0.00	0.010	3.0	1.0	1.0	0.250

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER NAME LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TAR-GET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST WATER Dist. miles	Width feet	Depth feet	Veloc ft/s	RESI-DENCE miles
88- 1- 802C	ROW BPA ROAD	11.60	4.80	CIAR	TORDON 22K	1.00	11.60	0.010	3.0	1.0	1.0	0.250
DAVIDSON/MASTER MINE(BPA)						0.00	0.00					
Sec. 32 , T 6N, R 11W												
88- 1- 802D	LINE	20.00	0.00	CEMA	TORDON 22K	0.50	0.00	0.010	3.0	1.0	1.0	0.250
DAVIDSON/MASTER MINE(BPA)						0.00	0.00					
Sec. 32 , T 6N, R 11W												
88- 1- 802F	LINE	20.00	0.00	CIAR	TORDON 22K	1.00	20.00	0.010	3.0	1.0	1.0	0.250
DAVIDSON/MASTER MINE(BPA)						0.00	0.00					
Sec. 32 , T 6N, R 11W												
88- 1- 803	ROW BPA ROAD	7.00	7.00	CEMA	TORDON 22K	0.25	1.75	0.250	0.0	0.0	0.0	7.000
MSTR MINE-EUREKA RDG(BPA)						0.00	0.00					
Sec. 11 , T 8N, R 12W		1.5 AC W/I .25 MI OF GOLD CR.										

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER NAME LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TARGET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST Dist. miles	Width feet	Depth feet	WATER Veloc ft/s	RESIDENCE miles
88- 2- 1 KILLIAN GULCH Sec. 31 , T 6N, R 3W	RANGE	1.50	0.00	LIDA	TORDON 22K	1.50 0.00	2.25 0.00	1.000	2.0	1.0	0.0	1.500
88- 2- 2 TACOMA GULCH Sec. 34 , T 6N, R 3W	RANGE	3.00	0.00	LIDA	TORDON 22K	1.50 0.00	4.50 0.00	0.250	0.9	0.5	0.0	0.500
88- 2- 3 ELKHORN Sec. 14 , T 6N, R 3W	RANGE	6.00 ELKHORN CREEK.	0.00	LIDA	2,4-D AMINE	2.00 0.00	12.00 0.00	0.100	0.1	0.0	0.0	0.100
88- 2- 4 SAUL HAGGERTY Sec. 1 , T 6N, R 6W	RANGE	3.00 BASIN CREEK.	0.00	LIVU	2,4-D AMINE	2.00 0.00	6.00 0.00	0.200	0.0	0.0	0.0	2.000
88- 2- 5 THUNDERBOLT Sec. 21 , T 6N, R 7W	RANGE	0.75 BOULDER RIVER.	0.00	EUES	TORDON 2K BEADS	2.00 0.00	1.50 0.00	0.250	5.0	2.0	0.0	2.000
88- 2- 6A LOWLAND CREEK RD. Sec. 26 , T 6N, R 7W	ROW	12.00 LOWLAND CREEK.	1.00	CEMA	2,4-D AMINE	2.00 0.00	0.00 0.00	0.170	0.0	0.0	0.0	2.500
88- 2- 6B LOWLAND CREEK RD. Sec. 26 , T 6N, R 7W	ROW	12.00 LOWLAND CREEK.	1.00	LIVU	2,4-D AMINE	2.00 0.00	24.00 0.00	0.170	0.0	0.0	0.0	2.500
88- 2- 6C BOULDER RIVER RD. Sec. 30 , T 6N, R 6W	ROW	12.00 BOULDER RIVER.	1.00	CEMA	2,4-D AMINE	2.00 0.00	0.00 0.00	0.120	0.0	0.0	0.0	0.500
88- 2- 6D BOULDER RIVER RD. Sec. 30 , T 6N, R 6W	ROW	12.00 BOULDER RIVER.	1.00	LIVU	2,4-D AMINE	2.00 0.00	24.00 0.00	0.120	0.0	0.0	0.0	0.500
88- 2- 6E BOULDER RIVER RD. Sec. 20 , T 6N, R 6W	ROW	3.00	0.50	CEMA	2,4-D AMINE	2.00 0.00	0.00 0.00	0.120	0.0	0.0	0.0	1.000
88- 2- 6F BOULDER RIVER RD. Sec. 20 , T 6N, R 6W	ROW	3.00	0.50	LIVU	2,4-D AMINE	2.00 0.00	6.00 0.00	0.120	0.0	0.0	0.0	1.000

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7/22/88

PROJECT NUMBER NAME LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TAR-GET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST WATER Dist. miles	Width feet	Depth feet	Velocity ft/s	RESIDENCE miles
88- 2- 7A BISON CREEK Sec. 4 , T 5N, R 6W	ROW	12.00	1.00	CEMA	2,4-D AMINE	2.00 0.00	0.00 0.00	0.120	0.0	0.0	0.0	1.000
88- 2- 7B BISON CREEK Sec. 4 , T 5N, R 6W	ROW	12.00	1.00	LIVU	2,4-D AMINE	2.00 0.00	24.00 0.00	0.120	0.0	0.0	0.0	1.000
88- 2- 8A GALENA GULCH Sec. 28 , T 6N, R 5W	RANGE	23.00	0.00	CIAR	TORDON 22K 2,4-D AMINE	0.50 2.00	0.00 0.00	0.250	0.0	0.0	0.0	2.000
88- 2- 8B GALENA GULCH Sec. 28 , T 6N, R 5W	RANGE	23.00	0.00	LIDA	TORDON 22K 2,4-D AMINE	1.50 2.00	34.50 46.00	0.250	0.0	0.0	0.0	2.000
88- 2- 9A LTL BOULDER R.- N FK RDS Sec. 7 , T 5N, R 4W	ROW	15.00	10.00	CIAR	2,4-D AMINE	2.00 0.00	0.00 0.00	0.125	0.0	0.0	0.0	2.500
88- 2- 9B LTL BOULDER R.- N FK RDS Sec. 7 , T 5N, R 4W	ROW	15.00	10.00	LIVU	2,4-D AMINE	2.00 0.00	0.00 0.00	0.125	0.0	0.0	0.0	2.500
88- 2- 9C LTL BOULDER R.- N FK RDS Sec. 7 , T 5N, R 4W	ROW	15.00	10.00	LIDA	2,4-D AMINE	2.00 0.00	30.00 0.00	0.125	0.0	0.0	0.0	2.500
88- 2- 10A UPPER LITTLE BOULDER Sec. 1 , T 4N, R 6W	RANGE	6.00 5 MILES TO CABIN, 10 MILES TO RESIDENCE.	0.00	CIAR	TORDON 2K BEADS	0.50 0.00	0.00 0.00	0.125	0.0	0.0	0.0	5.000
88- 2- 10B UPPER LITTLE BOULDER Sec. 1 , T 4N, R 6W	RANGE	6.00 5 MILES TO CABIN, 10 MILES TO RESIDENCE.	0.00	LIVU	TORDON 2K BEADS	1.50 0.00	9.00 0.00	0.125	0.0	0.0	0.0	5.000
88- 2- 11 FARNHAM CREEK Sec. 16 , T 5N, R 4W	RANGE	3.00	0.00	CEMA	2,4-D AMINE	2.00 0.00	6.00 0.00	0.125	0.0	0.0	0.0	2.000
88- 2- 12 GALENA GULCH Sec. 27 , T 6N, R 5W	ROW	3.00	1.00	CEMA	TORDON 22K	0.50 0.00	1.50 0.00	0.167	0.0	0.0	0.0	0.250

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER NAME LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TARGET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST WATER Dist. miles	Width feet	Depth feet	Veloc ft/s	RESIDENCE miles
88- 2- 13A BULL MTN AREA Sec. 6 , T 3N, R 3W	RANGE	9.00	0.00	CIAR	TORDON 22K 2,4-D AMINE	1.00 2.00	0.00 0.00	0.120	0.0	0.0	0.0	6.000
88- 2- 13B BULL MTN AREA Sec. 6 , T 3N, R 3W	RANGE	9.00	0.00	LIDA	TORDON 22K 2,4-D AMINE	1.50 2.00	13.50 18.00	0.120	0.0	0.0	0.0	6.000
88- 2- 14 CALDWELL RANCH-WHITETL CR Sec. 10 , T 3N, R 5W	ROW	6.00	5.00	CEMA	TORDON 22K 2,4-D AMINE	0.50 2.00	3.00 12.00	0.250	0.0	0.0	0.0	4.000
88- 2- 15A HOMESTAKE Sec. 13 , T 2N, R 7W	RANGE	4.00	0.00	CEMA	TORDON 22K	0.50 0.00	0.00 0.00	0.250	0.0	0.0	0.0	1.000
88- 2- 15B HOMESTAKE Sec. 18 , T 2N, R 6W	RANGE	4.00	0.00	LIVU	TORDON 22K	1.50 0.00	6.00 0.00	0.250	0.0	0.0	0.0	1.000
88- 2- 16A MCGOVERN Sec. 12 , T 2S, R 4N	RANGE	3.00	0.00	CIAR	TORDON 22K	0.50 0.00	1.50 0.00	0.250	0.0	0.0	0.0	1.500
88- 2- 16B MCGOVERN Sec. 12 , T 2S, R 4N	RANGE	3.00	0.00	CYOF	TORDON 22K	0.50 0.00	0.00 0.00	0.250	0.0	0.0	0.0	1.500
88- 2- 17 TOLL CANYON Sec. 13 , T 1N, R 7W	ROW	9.00	5.00	CEMA	TORDON 22K 2,4-D AMINE	0.50 2.00	4.50 18.00	0.250	0.0	0.0	0.0	0.500
88- 2- 18 BROOKS CANYON Sec. 32 , T 1S, R 4W	RANGE	3.00	0.00	EUES	TORDON 2K BEADS	2.00 0.00	6.00 0.00	1.000	0.0	0.0	0.0	1.500
88- 2- 19A DRY CR RD Sec. 32 , T 6N, R 2W	ROW	4.00	0.50	CEMA	TORDON 22K	0.50 0.00	0.00 0.00	0.250	0.0	0.0	0.0	0.750
88- 2- 19B DRY CR RD Sec. 32 , T 6N, R 2W	ROW	4.00	0.50	LIVU	TORDON 22K	1.50 0.00	6.00 0.00	0.250	0.0	0.0	0.0	0.750

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER NAME LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TAR-GET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST Dist. miles	Width feet	Depth feet	WATER Veloc ft/s	REST DENCE miles
88- 2- 20 TRAINER GU Sec. 26 , T 1N, R 7W	RANGE	3.00	0.00	DEOC	TORDON 22K	1.00 0.00	3.00 0.00	0.250	0.0	0.0	0.0	2.000
88- 2- 21 NINETEEN MILE Sec. 17 , T 1N, R 6W	RANGE	0.75	0.00	EUES	TORDON 2K BEADS	2.00 0.00	1.50 0.00	0.120	0.0	0.0	0.0	0.120
88- 2- 22A RADER CR. ROAD #240 Sec. 13 , T 2N, R 7W	RANGE	4.00	0.00	LIVU	2,4-D AMINE 0	2.00 0.00	8.00 0.00	0.125	0.0	0.0	0.0	0.125
88- 2- 22B RADER CR. ROAD #240 Sec. 13 , T 2N, R 7W	ROW	4.00 OLD 1987 PROJECT 36	1.50	CEMA	TORDON 22K 2,4-D AMINE	0.50 2.00	2.00 8.00	0.125	0.0	0.0	0.0	3.000
88- 2- 23 GALENA PK - N. FORK Sec. 4 , T 5N, R 5W	ROW	9.00	2.00	CEMA	TORDON 22K 2,4-D AMINE	0.50 2.00	4.50 18.00	0.500	0.0	0.0	0.0	0.250
88- 2- 24A SOUTH BOULDER RD Sec. 7 , T 2S, R 3W	ROW	6.00	2.00	CEMA	TORDON 22K	0.50 0.00	0.00 0.00	0.250	0.0	0.0	0.0	0.250
88- 2- 24B SOUTH BOULDER RD Sec. 7 , T 2S, R 3W	ROW	6.00	2.00	LIVU	TORDON 22K	1.50 0.00	9.00 0.00	0.250	0.0	0.0	0.0	0.250
88- 2- 24C SOUTH BOULDER RD Sec. 7 , T 2S, R 3W	ROW	6.00	2.00	SEJA	TORDON 22K	0.50 0.00	0.00 0.00	0.125	0.0	0.0	0.0	0.250
88- 2- 24D SOUTH BOULDER RD Sec. 7 , T 2S, R 3W	ROW	2.00	2.00	CIAR	TORDON 22K	0.50 0.00	0.00 0.00	0.250	0.0	0.0	0.0	0.250
88- 2- 25A BONE BASIN Sec. 10 , T 1S, R 4W	RANGE	3.00	0.00	EUES	TORDON 2K BEADS	2.00 0.00	6.00 0.00	0.250	0.0	0.0	0.0	2.500
88- 2- 25B BONE BASIN Sec. 10 , T 1S, R 4W	RANGE	3.00	0.00	CIAR	TORDON 2K BEADS	1.00 0.00	0.00 0.00	0.250	0.0	0.0	0.0	2.500

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER / NAME / LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TARGET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST WATER Dist. miles	Width feet	Depth feet	Veloc ft/s	RESIDENCE miles
88- 2- 26A PIGEON CR Sec. 30 , T 1N, R 6W	RANGE	4.00	0.00	CEMA	2,4-D AMINE	2.00 0.00	0.00 0.00	0.120	0.0	0.0	0.0	1.000
88- 2- 26B PIGEON CR Sec. 30 , T 1N, R 6W	RANGE	4.00	0.00	CIAR	2,4-D AMINE	2.00 0.00	0.00 0.00	0.120	0.0	0.0	0.0	1.000
88- 2- 26C PIGEON CR Sec. 30 , T 1N, R 6W	RANGE	4.00	0.00	LIVU	2,4-D AMINE	2.00 0.00	8.00 0.00	0.120	0.0	0.0	0.0	1.000
88- 2- 27A HOMESTAKE-DELMOE RD Sec. 4 , T 2N, R 6W	ROW	3.00	6.00	CEMA	TORDON 22K 2,4-D AMINE	0.50 2.00	0.00 0.00	0.250	0.0	0.0	0.0	0.000
88- 2- 27B HOMESTAKE-DELMOE RD Sec. 27 , T 3N, R 6W	ROW	3.00	6.00	LIDA	TORDON 22K 2,4-D AMINE	0.50 2.00	1.50 6.00	0.250	0.0	0.0	0.0	0.000
88- 2- 28 BOYLE GU Sec. 22 , T 6N, R 7W	ROW	1.50	0.00	CEMA	TORDON 22K	0.50 0.00	0.75 0.00	0.250	0.0	0.0	0.0	0.000
88- 2- 29A COYOTE FLAT Sec. 16 , T 2N, R 6W	RANGE	50.00	0.00	CEMA	TORDON 22K 2,4-D AMINE	0.50 2.00	25.00 100.00	0.250	0.0	0.0	0.0	2.500
88- 2- 29B COYOTE FLAT Sec. 16 , T 2N, R 6W	ROW	10.00	8.00	CEMA	TORDON 22K 2,4-D AMINE	0.50 2.00	5.00 20.00	0.250	0.0	0.0	0.0	2.500
88- 2- 30 CARMICHAEL AND BROWNBACK Sec. , T 1S, R 3W	RANGE	15.00	0.00	DEOC	TORDON 2K BEADS	1.00 0.00	15.00 0.00	0.250	0.0	0.0	0.0	2.250
88- 2- 31 DELMOE-HALFWAY PARK Sec. 23 , T 3N, R 6W	RANGE	1.50	0.00	LIVU	TORDON 2K BEADS	1.50 0.00	2.25 0.00	0.250	0.0	0.0	0.0	5.000
88- 2- 33A HORSE PASTURE-WORK CENTER Sec. 29 , T 6N, R 4W	RANGE	6.00	0.00	CEMA	TORDON 22K	0.50 0.00	0.00 0.00	0.100	0.0	0.0	0.0	0.000

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER NAME LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TAR-GET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST WATER Dist. miles	Width feet	Depth feet	Veloc ft/s	RESI DENCE miles
88- 2- 33B HORSE PASTURE-WORK CENTER Sec. 29 , T 6N, R 4W	RANGE	6.00	0.00	LIDA	TORDON 22K	1.50 0.00	9.00 0.00	0.100	0.0	0.0	0.0	0.100
88- 2- 34 HADLEY PK AREA RD. #88 Sec. 31 , T 5N, R 3W	ROW	2.00	5.00	CEMA	TORDON 22K	0.50 0.00	1.00 0.00	1.000	"	"	"	1.500
88- 2- 35A BEAR GU. ROAD #84 Sec. 2 , T 3S, R 5W	ROW	2.00	1.50	CEMA	TORDON 22K	0.50 0.00	1.00 0.00	0.125	"	"	"	1.000
88- 2- 35B BEAR GU. ROAD #84 Sec. 2 , T 3S, R 52	ROW	2.00	1.50	CIAR	TORDON 22K	0.50 0.00	0.00 0.00	0.125	"	"	"	1.000
88- 2- 37 RYAN GULCH Sec. 31 , T 5N, R 3W	RANGE	1.00	0.00	EUES	TORDON 22K	2.00 0.00	2.00 0.00	0.125	"	"	"	0.500
88- 2- 38 POLE CANYON Sec. 8 , T 1S, R 3W	ROW	2.00	0.50	CEMA	TORDON 22K 2,4-D AMINE	0.50 2.00	1.00 4.00	0.125	"	"	"	2.000
88- 2- 39 PERRY POLE ROAD #5104 Sec. 20 , T 1S, R 3W	ROW	2.00	1.50	CEMA	TORDON 22K 2,4-D AMINE	0.50 2.00	1.00 4.00	0.125	"	"	"	2.000
88- 2- 40 RATIO MTN. Sec. 12 , T 3N, R 5W	RANGE	5.00	0.00	CEMA	TORDON 22K	0.50 0.00	2.50 0.00	1.000	"	"	"	3.000
88- 2- 41 DRY MTN. Sec. 3 , T 2N, R 5W	RANGE	3.00	0.00	CEMA	TORDON 22K	0.50 0.00	1.50 0.00	2.000	"	"	"	3.000
88- 2- 42 ROCK CR.	RANGE	1.00	0.00	CEMA	TORDON 22K	0.50 0.00	0.50 0.00	0.020	"	"	"	0.250

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER / NAME / LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TARGET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST WATER Dist. miles	Width feet	Depth feet	Veloc ft/s	RESIDENCE miles
88- 2- 43 HELLS CANYON Sec. 1 , T 2S, R 7W	ROW	5.00	5.00	CEMA	TORDON 22K	0.50 0.00	2.50 0.00	0.020	"	"	"	5.000
		SPOT TREATMENT										
88- 2- 44 MILL CANYON Sec. 33 , T 1S, R 4W	RANGE	30.00	0.00	EUES	TORDON 22K	2.00 0.00	60.00 0.00	0.020	"	"	"	2.000
88- 2- 701 ANTIMONY MINE Sec. 18 , T 2S, R 4W	MINE ROW	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	0.50 0.00	0.009	0.0	"	"	0.750
		NEAREST WATER IS ANTIMONY CREEK.										
88- 2- 702A A & P MINE Sec. 21 , T 2S, R 3W	MINE	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	2.00 0.00	0.250	"	"	"	0.125
		NEAREST WATER IS SEEPS. NEAREST RESIDENCE IS A CABIN ON FOREST.										
88- 2- 702B A & P MINE Sec. 21 , T 2S, R 3W	MINE ROW	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	0.25 0.00	0.250	"	"	"	0.125
		NEAREST WATER IS SEEPS. NEAREST RESIDENCE IS A CABIN ON FOREST.										
88- 2- 703 GOLDFIELDS EXPLORATION Sec. 11 , T 6N, R 3W	MINE ROW	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	0.50 0.00	0.250	"	"	"	0.500
88- 2- 704 FALCON HEAP LEACH Sec. 15 , T 6N, R 3W	MINE	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	1.00 0.00	0.090	2.0	1.0	0.5	1.000
		NEAREST WATER IS TURNLEY CR.										
88- 2- 705A WATKINS MINE Sec. 25 , T 6N, R 6W	MINE	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	4.00 0.00	0.009	"	"	"	2.000
88- 2- 705B WATKINS MINE Sec. 25 , T 6N, R 6W	MINE ROW	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	0.50 0.00	0.009	"	"	"	0.050
88- 2- 801 BPA LINE Sec. , T 6N, R 6W	ROW BPA ROAD	1.00	4.00	CIAR	2,4-D AMINE	2.00 0.00	2.00 0.00	0.000	0.0	0.0	0.0	0.000
		THIS IS OLD 1987 PROJECT #32. CANNOT USE PICLORAM ON BPA EAST OF GARRISON.										

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER NAME LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TARGET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST Dist. miles	Width feet	Depth feet	WATER Veloc ft/s	RESIDENCE miles
88- 3- 3A EAST FORK ROAD #672 Sec. 27 , T 5N, R 14W	ROW	14.00	7.00	CEMA	TORDON 22K	0.50 0.00	7.00 0.00	0.001	3.0	1.0	1.0	2.000
88- 3- 3B EAST FORK ROAD #672 Sec. 27 , T 5N, R 14W	ROW	8.00	4.50	CANU	TORDON 22K	0.50 0.00	0.00 0.00	0.001	3.0	1.0	1.0	2.000
88- 3- 3C EAST FORK ROAD #672 Sec. 27 , T 5N, R 14W	ROW	5.00	4.50	CIAR	TORDON 22K	0.50 0.00	0.00 0.00	0.001	3.0	1.0	1.0	2.000
88- 3- 4A EAST FORK DAM Sec. 6 , T 4N, R 14W	ROW	18.00	4.00	CEMA	TORDON 22K	0.50 0.00	8.50 0.00	0.020	8.5	0.0	0.0	2.000
88- 3- 4B EAST FORK DAM Sec. 6 , T 4N, R 14W	ROW	10.00	3.00	CANU	TORDON 22K	0.50 0.00	0.00 0.00	0.020	0.0	0.0	0.0	2.000
88- 3- 4C EAST FORK DAM Sec. 6 , T 4N, R 14W	ROW	1.00	0.25	LIVU	TORDON 22K	2.00 0.00	2.00 0.00	0.020	0.0	0.0	0.0	2.000
88- 3- 5A MEADOW CR. RD. #5141 Sec. 1 , T 4N, R 14W	ROW	10.00	10.00	CEMA	TORDON 22K	0.50 0.00	5.00 0.00	0.020	6.0	2.0	3.0	3.000
88- 3- 5B MEADOW CR. RD. #5141 Sec. 1 , T 4N, R 14W	ROW	25.00	8.00	CANU	TORDON 22K	0.50 0.00	7.50 0.00	0.020	6.0	2.0	3.0	3.000
88- 3- 6A DRY GU. AREA Sec. 6 , T 4N, R 14W	RANGE	18.00	0.00	CEMA	TORDON 22K	0.50 0.00	9.00 0.00	0.100	1.0	1.0	1.0	3.000
88- 3- 6B DRY GU. AREA Sec. 6 , T 4N, R 14W	RANGE	5.00	0.00	CANU	TORDON 22K	0.50 0.00	0.00 0.00	0.100	1.0	1.0	1.0	3.000
88- 3- 6C DRY GU. RD. #5006 Sec. 6 , T 4N, R 14W	ROW	5.00	2.50	CANU	TORDON 22K	0.50 0.00	2.50 0.00	0.100	1.0	1.0	1.0	3.000
88- 3- 7A MIDDLE FORK ROAD Sec. 5 , T 4N, R 15W	ROW	40.00	8.00	CEMA	TORDON 22K	0.50 0.00	20.00 0.00	0.100	34.0	2.0	3.5	0.250

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER NAME LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TAR-GET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST WATER Dist. miles	Width feet	Depth feet	Veloc ft/s	RESI DENCE miles
88- 3- 7B MIDDLE FORK ROAD Sec. 5 , T 4N, R 15W	RANGE	21.00	0.00	CEMA	TORDON 22K	0.50 0.00	10.50 0.00	0.100	34.0	2.0	3.5	0.250
88- 3- 8A KAISER LAKE ROAD #5121 Sec. 18 , T 4N, R 15W	ROW	14.00	7.00	CEMA	TORDON 22K	0.50 0.00	7.00 0.00	0.100	34.0	2.0	3.5	1.500
88- 3- 8B KAISER LAKE ROAD #5121 Sec. 18 , T 4N, R 15W	ROW	5.00	6.00	CANU	TORDON 22K	0.50 0.00	0.00 0.00	0.100	34.0	2.0	3.5	1.500
88- 3- 9 COPPER CREEK ROAD #00 Sec. 26 , T 4N, R 16W	ROW	18.00	9.00	CEMA	TORDON 22K	0.50 0.00	9.00 0.00	0.001	20.0	2.0	3.0	1.500
88- 3- 10 MOOSE LAKE ROAD #5106 Sec. 25 , T 4N, R 16W	ROW	12.00	3.00	CEMA	TORDON 22K	0.50 0.00	6.00 0.00	0.020	14.0	1.0	2.0	0.100
88- 3- 11A MINERS GULCH ROAD #5156 Sec. 30 , T 8N, R 15W	ROW	18.00	9.00	CEMA	TORDON 22K	0.50 0.00	9.00 0.00	0.250	16.0	2.0	3.0	0.500
88- 3- 11B MINERS GULCH ROAD #5156 Sec. 30 , T 8N, R 15W	ROW	5.00	7.00	CANU	TORDON 22K	0.50 0.00	0.00 0.00	0.250	16.0	2.0	3.0	0.500
88- 3- 11C MINERS GULCH ROAD #5156 Sec. 30 , T 8N, R 15W	ROW	5.00	7.00	CIAR	TORDON 22K	0.50 0.00	0.00 0.00	0.250	16.0	2.0	3.0	0.500
88- 3- 12A S. BOULDER RIDGE #8404 Sec. 32 , T 8N, R 13W	ROW	13.00 ADDED 3 ACRES FY 1988.	2.00	CEMA	TORDON 22K	0.50 0.00	6.50 0.00	0.500	2.0	1.0	1.0	3.000
88- 3- 15A SAWMILL GULCH Sec. 24 , T 6N, R 14W	RANGE	20.00 ADDED 17 ACRES FOR 1988.	0.00	CEMA	TORDON 22K	0.50 0.00	10.00 0.00	0.200	3.0	0.5	1.0	1.000
88- 3- 16A BEAVER CREEK	ROW	2.00	1.50	CEMA	TORDON 22K	0.50 0.00	1.00 0.00	0.001	5.0	1.0	1.0	0.700

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER NAME LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TAR-GET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST WATER Dist. miles	Width feet	Depth feet	Veloc ft/s	RESI DENCE miles
88- 3- 16B BEAVER CREEK Sec. 34 , T 6N, R 16W	ROW	15.00	9.00	CANU	TORDON 22K	0.50 0.00	6.50 0.00	0.001	5.0	1.0	1.0	0.700
88- 3- 17 EMERINE GULCH Sec. 23 , T 6N, R 16W	RANGE	103.00	0.00	CEMA	TORDON 22K	0.50 0.00	51.50 0.00	0.100	20.0	2.0	4.0	0.900
88- 3- 18A COAL GULCH Sec. 29 , T 6N, R 16W	ROW	10.00	4.00	CEMA	TORDON 22K	0.50 0.00	5.00 0.00	0.001	20.0	2.0	4.0	0.250
88- 3- 18B COAL GULCH Sec. 29 , T 6N, R 16W	ROW	5.00	5.00	CANU	TORDON 22K	0.50 0.00	0.00 0.00	0.001	20.0	2.0	4.0	0.250
88- 3- 19A MONTGOMERY GULCH Sec. 35 , T 7N, R 16W	ROW	37.00	6.00	CEMA	TORDON 22K	0.50 0.00	18.50 0.00	0.200	3.0	0.5	1.0	0.200
88- 3- 19B MONTGOMERY GULCH Sec. 35 , T 7N, R 16W	ROW	25.00	13.00	CANU	TORDON 22K	0.50 0.00	0.00 0.00	0.200	3.0	0.5	1.0	0.200
88- 3- 19C ROCK CREEK ROAD Sec. 21 , T 7N, R 16W	ROW	10.00	4.00	CEMA	TORDON 22K	0.50 0.00	5.00 0.00	0.001	60.0	3.0	5.0	0.100
88- 3- 20A MOOSE GU. RD. #5012 Sec. 21 , T 7N, R 16W	ROW	10.00	5.00	CANU	TORDON 22K	0.50 0.00	5.00 0.00	0.100	60.0	3.0	5.0	0.100
88- 3- 20B MOOSE GU. RD. #5012 Sec. 21 , T 7N, R 16W	ROW	10.00	5.00	CEMA	TORDON 22K	0.50 0.00	0.00 0.00	0.100	60.0	3.0	5.0	0.100
88- 3- 21A STONEY CREEK ROAD Sec. 20 , T 7N, R 16W	ROW	25.00	5.00	CEMA	TORDON 22K	0.50 0.00	12.50 0.00	0.001	14.0	1.5	2.0	0.250
88- 3- 21B STONEY CREEK ROAD Sec. 20 , T 7N, R 16W	ROW	9.00	5.00	CANU	TORDON 22K	0.50 0.00	0.00 0.00	0.001	14.0	1.5	2.0	0.250

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER / NAME / LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TARGET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST WATER Dist. miles	Width feet	Depth feet	Veloc ft/s	RESI DENCE miles
88- 3- 21C STONEY CREEK ROAD Sec. 21 , T 7N, R 16W	RANGE	15.00	0.00	CEMA	TORDON 22K	0.50 0.00	7.50 0.00	0.020	14.0	1.5	2.0	0.250
88- 3- 21D SQUAW ROCK CAMPGROUND Sec. 21 , T 7N, R 16W	CAMPGROUND	1.00	0.00	CEMA		0.00 0.00	0.00 0.00	0.001	14.0	1.5	2.0	0.250
		NEAREST WATER IS STONEY CR. HAND GRUB OR MOW.										
88- 3- 22A SCHIVELY RIDGE ROAD Sec. 19 , T 7N, R 16W	ROW	10.00	3.50	CEMA	TORDON 22K	0.50 0.00	5.00 0.00	0.100	14.0	1.5	2.0	3.000
88- 3- 22B SCHIVELY RIDGE ROAD Sec. 19 , T 7N, R 16W	ROW	6.00	3.00	CANU	TORDON 22K	0.50 0.00	0.00 0.00	0.100	14.0	1.5	2.0	3.000
88- 3- 22C SCHIVELY RIDGE ROAD Sec. 19 , T 7N, R 16W	RANGE	25.00	0.00	CEMA	TORDON 22K	0.50 0.00	12.50 0.00	0.500	0.0	0.0	0.0	1.500
		NEAREST WATER IS A SPRING.										
88- 3- 24A STEWART LAKE Sec. 16 , T 7N, R 13W	ROW	10.00	1.50	CEMA	TORDON 22K	0.50 0.00	5.00 0.00	0.100	0.0	0.0	0.0	0.100
		NEAREST WATER IS STEWART LAKE. ADDED 7 ACRES FY 1988.										
88- 3- 39 ELK CR. ROAD Sec. 9 , T 4N, R 14W	ROW	5.00	2.00	CANU	TORDON 22K	0.50 0.00	2.50 0.00	0.100	2.0	0.5	0.5	3.000
88- 3- 40 SQUAW CREEK Sec. 20 , T 4N, R 15W	ROW	10.00	2.00	CANU	TORDON 22K	0.50 0.00	5.00 0.00	0.001	3.0	0.5	0.5	0.250
88- 3- 41 ROSS FORK Sec. 25 , T 5N, R 16W	ROW	15.00	5.00	CANU	TORDON 22K	0.50 0.00	7.50 0.00	0.001	18.0	1.5	2.0	0.010
88- 3- 701 QUARTZ GU. PLACER Sec. 33 , T 7N, R 16W	MINE	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	25.00 0.00	0.001	1.5	1.0	0.1	2.000
		NEAREST WATER IS QUARTZ GULCH										
88- 3- 702 WILLIAMS GU. MINE (ROADS)	MINE ROW	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	0.75 0.00	0.009	"	"	"	3.000

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER NAME LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TAR-GET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST WATER Dist. miles	Width feet	Depth feet	Veloc ft/s	REST DENCE miles
88- 3- 703 GOLDEN JUBILEE MINE Sec. 14 , T 6N, R 13W	MINE	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	12.50 0.00	0.050	"	"	"	0.500
88- 3- 704 GOLDEN EAGLE MINE Sec. 27 , T 6N, R 13W	MINE	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	1.00 0.00	0.100	0.0	"	"	0.250
88- 3- 705 GEORGETOWN AREA Sec. 9 , T 5N, R 13W	MINE	0.00	0.00	CEMA	TORDON 22K	0.50 0.00	1.00 0.00	0.100	"	"	"	0.250

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER NAME LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TAR-GET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST WATER Dist. miles	Width feet	Depth feet	Veloc ft/s	RESI DENCE miles
88- 4- 8C HIGH RYE Sec. 27 , T 3N, R 10W	ROW	1.35	1.50	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	0.68 1.35	0.002	5.0	2.0	4.0	4.500
88- 4- 8D HIGH RYE Sec. 27 , T 3N, R 10W	RANGE	1.00	0.00	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	0.50 1.00	0.002	5.0	2.0	4.0	4.500
88- 4- 43 UPPER MOOSE CR.RDS. Sec. 6 , T 1S, R 7W	ROW	0.10	0.25	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	0.05 0.10	0.250	1.0	0.5	2.0	1.000
88- 4- 44 HIGHLAND ROAD #84 Sec. 36 , T 1N, R 8W	ROW	0.30	1.00	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	0.15 0.30	0.250	3.0	1.0	2.0	1.000
88- 4- 45 BIG PARK Sec. 18 , T 1N, R 9W	ROW	0.10	0.10	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	0.05 0.10	0.250	1.0	0.5	2.0	5.000
88- 4- 46 HAIL COLUMBIA RD #9485 Sec. 14 , T 4N, R 8W	ROW	0.10	0.50	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	0.05 0.10	0.019	2.0	1.0	3.0	0.250
88- 4- 47 NORTH BURTON PARK Sec. 16 , T 1N, R 8W	ROW	0.20	0.20	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	0.10 0.20	0.250	1.0	0.5	2.0	4.500
88- 4- 48 FISH CR. RIDGE Sec. 5 , T 1S, R 7W	RANGE	2.00	0.00	DEOC	TORDON 22K 2,4-D AMINE	0.50 1.50	1.00 3.00	1.000	1.0	0.5	2.0	12.000
88- 4- 49 KONDA Sec. 3 , T 4N, R 7W	ROW	0.10	1.50	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	0.05 0.10	0.500	3.0	1.0	4.0	0.250
88- 4- 50 SWEDE-MAIN-OLSON Sec. 28 , T 5N, R 7W	ROW	4.00	2.50	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	2.00 4.00	0.250	0.5	0.5	2.0	0.500
		KV FUNDS AVAILABLE										

DEERLODGE NATIONAL FOREST PESTICIDE USE PROPOSAL
7/22/88

PROJECT NUMBER NAME LOCATION	TYPE	AREA AFFECTED BY EACH WEED Acres	Miles	TAR-GET WEED	CHEMICAL NAME	AI / ACRE lbs	TOTAL AI lbs	DISTANCE TO NEAREST WATER Dist. miles	Width feet	Depth feet	Veloc ft/s	RESI-DENCE miles
88- 4- 51 BROWNS-ALASKA Sec. 36 , T 5N, R 8W	ROW	2.00 KV FUNDS AVAILABLE	2.50	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	1.00 2.00	0.250	0.5	0.5	2.0	2.500
88- 4- 701A LIME KILN AREA Sec. 28 , T 1N, R 7W	MINE	0.00	0.00	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	1.50 3.00	0.009	"	"	"	0.500
88- 4- 701B LIME KILN AREA Sec. 28 , T 1N, R 7W	MINE ROW	0.00	0.00	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	2.00 4.00	0.009	"	"	"	0.500
88- 4- 702 GOLD HILL AREA Sec. 12 , T 1S, R 8W	MINE	0.00	0.00	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	2.50 5.00	0.250	"	"	"	1.000
88- 4- 703A BEAL MINE Sec. 6 , T 2N, R 10W	MINE	0.00	0.00	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	5.00 10.00	0.090	"	"	"	1.000
88- 4- 703B BEAL MINE ACCESS ROADS Sec. 5 , T 2N, R 10W	MINE ROW	0.00	0.00	CEMA	TORDON 22K 2,4-D AMINE	0.50 1.00	0.25 0.50	0.090	"	"	"	0.010

APPENDIX B

SOCIAL AND ECONOMIC ENVIRONMENT

No changes.

APPENDIX C

MANAGEMENT REQUIREMENTS

Substitute for the Management Requirements in the 1987 EIS.

1. The Integrated Pest Management Working Group (IPMWG) will review all pesticide use proposals to insure that label restrictions are being followed in compliance with State and Federal requirements.

2. The IPMWG will review pesticide use proposals to insure that there is little chance that the NOEL for sensitive fish and wildlife species will be exceeded. In certain cases, the potential for impact to fish may require a field review by one member or all members of the IPMWG.

3. Selected projects will be monitored by the Integrated Pesticide management Work Group to determine the effectiveness of weed control efforts and chemical formulations, and to assure that management requirements are strictly adhered to. Monitoring will consist of vegetation surveys to determine control effectiveness, and soil analysis to determine the fate of picloram on representative projects. Also see appendix J.

4. In order to maintain adequate margins of safety, workers will not be permitted to apply more than 2 pounds of 2,4-D active ingredient per day using backpack sprayers or handheld hoses and nozzles from truck mounted tanks. Workers will also be advised of the possible effects of 2,4-D application and the necessity of careful techniques and protective clothing when working with any herbicides.

5. Areas within a herbicide project that contain wild food sources will be signed for two weeks after spraying if the source of wild food is sprayed with herbicide.

6. All herbicide projects in the vicinity of developed recreation sites and administrative sites will be posted with warning signs for two weeks after herbicides have been applied.

7. Each District will compile a list of area residents and Forest users that experience sensitization difficulties from herbicides, i.e. allergic reactions. These people and others identified in the future will be notified concerning weed control activities that may affect them.

8. All Ranger Districts involved in the noxious weed control program will prepare appropriate project safety plans and job hazard analyses as outlined in Forest Service Manual Direction and in conjunction with the Federal Health and Safety Code Handbook. The resulting requirements will be followed to ensure worker safety.

9. Prior to treatment, buffer strips will be established between live streams and areas treated with herbicide in order to prevent chemicals from washing into streams. Areas of special concern are road ditches, cuts, and shoulders near stream crossing. No herbicide will be applied to buffer strips. Hand grubbing or other nonchemical methods may be used in these areas.

10. All projects in Rock Creek will be reviewed in detail by the Forest Fisheries Biologist to assure that they have a safety margin of 1.0 or greater.

11. The licensed applicator will be present on the project area any time herbicide is applied in rock Creek.

12. Selected streams in the Rock Creek Drainage will be monitored before and after herbicide application (see Aquatic Monitoring Plan - Rock Creek, Appendix K).

13. The Deerlodge National Forest will coordinate with other State, Federal and County agencies as well as private land owners both for control and prevention of noxious weed infestations.

14. Follow label instructions and utilize application rates which are well below the NOEL levels for terestial and aquatic species.

15. Areas treated with herbicides this year will be considered when cumulative effects are evaluated for projects in future years. Representive soil profiles will be monitored to determine the cumulative effects of retreatment with picloram (Tordon).

16. Search for Missoula phlox and keeled bladderpod in the West Fork Buttes area and search for yellow springbeauty on the east side of the Deer Lodge Valley before any spraying in these areas. All sensitive plant species will be protected from weed control activities.

17. Apply herbicides only with ground based equipment, emphasizing the treatment of individual plants.

18. Utilize herbicides which do not bioaccumulate.

19. If any sign is discovered or if any threatened or endangered species are sighted near the project area, all operations will stand-by until a full evaluation of the situation is made.

20. Do not exceed two pounds of active ingredient of herbicide per acre.

21. Dense roadside vegetation and other cover patches will be checked for nests and occupied dens before spraying. The Forest wildlife biologist will be contacted prior to proceeding with the project if nests or dens are found.

22. Districts will coordinate spring spraying with travel management areas designed to protect spring big game range.

23. The Forest Archaeologist will identify projects likely to contain cultural sites and the need for field inventory before weeds are hand grubbed. The inventory, if necessary, will occur prior to any surface disturbance so that potential effects of the treatment to cultural sites can be assessed.

24. New biological, chemical, cultural, manual, or mechanical methods of weed control will be evaluated annually to determine potential for use on the Forest.

APPENDIX D

SENSITIVITY OF SELECTED AQUATIC ORGANISMS TO VARIOUS FORMULATIONS OF TWO HERBICIDES

No change.

APPENDIX E

(AMMENDED) BIOLOGICAL ASSESSMENT

THREATENED AND ENDANGERED SPECIES

NOXIOUS WEED AND POISONOUS PLANT CONTROL

DEERLODGE NATIONAL FOREST

1988

Introduction

No Change.

Description of the Project

Substitute the following on pages E-1 and E-2.

The following is a summary of the project (it is based on the highest potential impact i.e. treatment of all 2,332 acres of proposed chemical applications in 1 year), for further detail please refer to the "Preferred Alternative" section in this EIS.

The preferred alternative allows for the treatment of a total of 4,191 acres; 2,332 acres by herbicide, 1,830 acres by biological control and 29 acres by cultural treatment (hand grubbing and mowing). This level could be accomplished entirely in one year or any or all parts of this level over a 3 three year period. From a chemical concentration and toxicity stand point, the treatment of all 2,332 acres in 1 year represents the "worst case". This is true because project areas are disjunct and cumulative treatments over a 3 year period will not occur in a localized area.

Two chemicals are proposed for use between 1987 and 1989; Tordon and 2,4-D.

The preferred alternative calls for emphasis on herbicide treatment of infestations of noxious weeds and poisonous plants, with manual grubbing, mowing or biological control on areas which are environmentally sensitive. The proposal will involve 0.3 percent of the Deerlodge National Forest. Application of the herbicide will be by ground based equipment only, emphasizing treatment of individual plants. Proposed application rates involve a maximum of 2 pounds of active ingredient per acre. Target plants for treatment include; spotted knapweed, toadflax, leafy spurge, Canada and musk thistle, and tall larkspur.

Current Status, Habitat Use and Behavior of the Bald Eagle and Peregrine Falcon in the Project Area

No Change.

Coordination Measures That Will Reduce/Eliminate Adverse Impacts on Threatened or Endangered Species

No Change.

Determination of Effect

No Change.

Literature Citations and Personal Contacts

No Change.

APPENDIX F

HUMAN HEALTH RISK ANALSIS FOR THE PROPOSED HERBICIDE SPRAY PROGRAM TO CONTROL NOXIOUS WEEDS ON THE DEERLODGE NATIONAL FOREST

Page F-1 Modify the first paragraph to read:

This analysis provides a worst-case risk to human health as a result of herbicide spray programs to control noxious weeds on the Deerlodge National Forest. Alternative 2 proposes herbicide applications of 2-4-D and Tordon (picloram) on approximately 2,332 acres of rangeland and road rights-of-way spread over the 1.2 million acre Deerlodge National Forest. Some projects are located near occupied and potentially occupied sites such as residences, recreation sites, and administrative sites.

Change the 1987 projects that have been modified and add the new projects to Table 1 on pages F-1 to F-3 in the 1987 EIS.

TABLE 1 HERBICIDE APPLIED TO RANGELAND, LINE, AND MINE PROJECTS - MODIFIED 1987 PROJECTS OR NEW PROJECTS

District	Project	Net Treated Area Acres	2,4-D Lbs. Active Ingredient	PICLORAM Lbs. Active Ingredient
Deer Lodge	2	4.00		4.00
	3	1.00		1.00
	7	8.00		2.00
	12	15.00		3.75
	13	7.00		1.75
	23	40.00		10.00
	43 *	2.00		0.50
	701 *	10.00		5.00
	702 *	100.00		50.00
	703 *	3.50		3.50
	704 *	2.00		1.00
	705 *	0.10		0.03
Jefferson	1	1.50		2.25
	2	3.00		4.50
	3	6.00	12.00	
	4	3.00	6.00	
	5	0.75		1.50
	8	23.00	46.00	34.50
	10	6.00		9.00
	11	3.00	6.00	
	13	9.00	18.00	13.50

* - New project.

TABLE 1. HERBICIDE APPLIED TO RANGELAND, LINE, AND MINE PROJECTS (CONTINUED)

District	Project	Net Treated Area Acres	2,4-D Lbs. Active Ingredient	PICLORAM Lbs. Active Ingredient
Jefferson (Continued)	15	4.00		6.00
	16	3.00		1.50
	18	3.00		6.00
	20	3.00		3.00
	21	0.75		1.50
	22A	4.00	8.00	
	25	3.00		6.00
	26	4.00	8.00	
	29A	50.00	100.00	25.00
	30	15.00		15.00
	31	1.50		2.25
	33	6.00		9.00
	37 *	1.00		2.00
	40 *	5.00		2.50
	41 *	3.00		1.50
	42 *	1.00		0.50
	44 *	30.00		60.00
	702A *	4.00		2.00
	704 *	2.00		1.00
	705A *	8.00		4.00
Philipsburg	6 **	18.00		9.00
	7B **	21.00		10.50
	15A	20.00		10.00
	17 **	103.00		51.50
	21C	15.00		7.50
	22C	25.00		12.50
	701 **	50.00		25.00
	703 *	25.00		12.50
	704 *	2.00		1.00
	705 *	2.00		1.00
Butte	8D	1.00	1.00	0.50
	48 *	2.00	3.00	1.00
	701A *	3.00	3.00	1.50
	702 *	5.00	5.00	2.50
	703A *	10.00	10.00	5.00

* New Project
** New Project in Rock Creek

Change modified 1987 projects and add new projects to Table 2 pages F-3 to F-5 in the 1987 EIS.

TABLE 2. HERBICIDE APPLIED TO RIGHT-OF-WAY PROJECTS - MODIFIED 1987 PROJECTS OR NEW PROJECTS.

District	Project	Net Treated Area Acres	2, 4-D Lbs. Active Ingredient	PICLORAM Lbs. Active Ingredient
Deer Lodge	10	5.00		5.00
	15	20.00		20.00
	21	5.00		5.00
	22	9.00		2.25
	34	5.00		5.00
	41	1.00		0.25
	42 *	2.00		0.50
	44 *	17.00		4.25
	803 *	7.00		1.75
Jefferson	6A	12.00	24.00	
	6D	12.00	24.00	
	6F	3.00	6.00	
	7	12.00	24.00	
	9	15.00	30.00	
	12	3.00		1.50
	14	6.00	12.00	3.00
	17	9.00	18.00	4.50
	19	4.00		6.00
	22B	4.00	8.00	2.00
	23	9.00	18.00	4.50
	24	6.00		9.00
	27	3.00	6.00	1.50
	28	1.50		0.75
	29B	10.00	20.00	5.00
	34 *	2.00		1.00
	35 *	2.00		1.00
	38 *	2.00	4.00	1.00
	39 *	2.00	4.00	1.00
	43 *	5.00		2.50
	701 *	1.00		0.50
	702B *	0.50		0.25
	703 *	1.00		0.50
	705B *	1.00		0.50
Philipsburg	3 **	14.00		7.00
	4 **	18.00		10.50
	5 **	25.00		12.50
	6C **	5.00		2.50

* New Project
** New Project in Rock Creek

TABLE 2. HERBICIDE APPLIED TO RIGHT-OF-WAY PROJECTS (CONTINUED)

District	Project	Net Treated Area Acres	2, 4-D Lbs. Active Ingredient	PICLORAM Lbs. Active Ingredient
Philipsburg (Continued)	7A **	40.00		20.00
	8 **	14.00		7.00
	9 **	18.00		9.00
	10 **	12.00		6.00
	11 **	18.00		9.00
	12A	13.00		6.50
	16 **	15.00		7.50
	18 **	10.00		5.00
	19A&B **	37.00		18.50
	19C *	10.00		5.00
	20 **	10.00		5.00
	21 **	25.00		12.50
	22 **	10.00		5.00
	24A	10.00		5.00
	39 **	5.00		2.50
	40 **	10.00		5.00
	41 **	15.00		7.50
	702 **	1.50		0.75
Butte	8C	1.35	1.35	0.68
	43 *	0.10	0.10	0.05
	44 *	0.30	0.30	0.15
	45 *	0.10	0.10	0.05
	46 *	0.10	0.10	0.05
	47 *	0.20	0.20	0.10
	49 *	0.10	0.10	0.05
	50 *	4.00	4.00	2.00
	51 *	2.00	2.00	1.00
	701B *	4.00	4.00	2.00
	703B *	0.50	0.50	0.25

Worst-Case Open Range Project (Page F-5)

Exposure Analysis

Insert between the first and second paragraph on page F-6

Jefferson District (D-2) project 29A is a modified 1987 range project that calls for application of 100 pounds of picloram, the same amount as the worst-case project analyzed in the 1987 EIS. This project will not be analyzed further since it is similar to the worst-case project analyzed in the 1987 document and involves significantly less exposure to workers and the public than the model project.

Health Implications of Doses: Threshold Effects (Page F-8)

No change.

Cancer and Mutations (Page F-9)

No change.

Impacts on Workers from Open Range Spraying (Page F-14)

No change.

Worst-case Rights-of-Way Project (Page F-17)

Insert between the second and third paragraph on page F-17.

Jefferson District projects 6A, 6D, 7, and 9 have proposed applications of 24, 24, 24, and 30 pounds of 2,4-D respectively. Each of these exceeds the worst-case Forest projects analyzed in the 1987 EIS. However, each is significantly less than the model ROW project which calls for application of 40 pounds of 2,4-D. The nearest residence is over 2,600 feet away from any potential spray area on one project and are are more than 1 mile from the other projects. The exposures to workers and the public will be significantly less than the exposure analyzed for the model project in the backround document (Monnig, E.C., 1986).

Potentially Occupied Sites (Page F-19)

Change the first sentence to read:

Application of small quantities of 2,4-D or picloram is proposed on 11 rights-of-way projects and 6 range projects near 17 developed recreation sites.

APPENDIX G

MODEL DEVELOPMENT

No change.

APPENDIX H

MODEL OUTPUT FOR EXAMINED ALTERNATIVES

Substitute on title page

This appendix contains the output from the noxious weed model for the examined alternatives. All projects are included: the new and modified projects for 1988 plus the 1987 projects that were not changed. The information from this appendix is summarized in Chapter 4, Table IV-6. Appendix G contains the description of the components that went into the model.

NO ACTION

Initial Acres Treated Per Year = 0. Treatment Cost Per Acre = $ .00

Acres of Infestation, by Species, after Treatment in Indicated Year

Species	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Knapweed	2497	3171	4027	5115	6496	8250	10477	13306	16899	21461	27256	140989
Leafy Spurge	1115	1249	1399	1566	1754	1965	2201	2465	2761	3092	3463	7861
Toadflax	135	140	146	152	158	164	171	178	185	192	200	259
Thistle	334	347	361	376	391	406	423	440	457	475	494	654
TOTAL	4081	4908	5933	7209	8799	10785	13271	16388	20301	25221	31413	149763

Acres Treated, by Treatment Type

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Tordon	-	0	0	0	0	0	0	0	0	0	0	0
2,4-D	-	0	0	0	0	0	0	0	0	0	0	0
Hand Grub	-	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-	0	0	0	0	0	0	0	0	0	0	0

Pounds of Active Ingredient Applied, by Herbicide

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Tordon	-	0	0	0	0	0	0	0	0	0	0	0
2,4-D	-	0	0	0	0	0	0	0	0	0	0	0

Forage Loss (Cattle & Winter Elk) and Winter Elk (Capability to Support) Loss

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Cattle AUMs	375	457	560	689	850	1052	1306	1625	2026	2532	3169	34842
Elk Months	300	362	439	535	653	801	985	1216	1504	1865	2320	19753
# of Elk	60	72	88	107	131	160	197	243	301	373	464	3951

Net Forage (Cattle & Winter Elk) and Net Winter Elk (Capability to Support), from Forest Plan Levels

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Cattle AUMs	63421	63338	63235	63106	62945	62743	62489	62170	61769	61263	60626	28953
Elk Months	19453	19391	19314	19218	19100	18952	18768	18537	18249	17888	17433	0
# of Elk	3890	3878	3862	3843	3819	3790	3753	3707	3649	3577	3486	0

NO ACTION

Initial Acres Treated Per Year = 0. Treatment Cost Per Acre = $ .00

Net Forage (Cattle & Winter Elk) and Net Winter Elk (Capability to Support), as a Percent of Forest Plan Levels

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Cattle AUMs	99	99	99	99	99	98	98	97	97	96	95	45
Elk Months	98	98	98	97	97	96	95	94	92	91	88	0
# of Elk	98	98	98	97	97	96	95	94	92	91	88	0

Net Value Loss (Cattle AUM and Winter Elk (HVD)) and Treatment Cost

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
AUM Loss	140	171	209	258	318	393	488	607	757	946	1184	13018
Elk Loss	6480	7825	9488	11548	14108	17296	21272	26244	32468	40274	50076	426448
Total Loss	6620	7996	9697	11806	14426	17689	21761	26851	33225	41220	51260	439466
Trtmnt Cost	0	0	0	0	0	0	0	0	0	0	0	0
Total Cost	6620	7996	9697	11806	14426	17689	21761	26851	33225	41220	51260	439466

Discounted Total Loss: 1942584 Discounted Treatment Cost: 0 Discounted Total Cost: 1942584

Employment Loss Due to AUM and Winter Elk (Capability to Support) Loss

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
AUM Employ	.24	.30	.36	.45	.55	.68	.85	1.06	1.32	1.65	2.06	22.65
Elk Employ	.41	.49	.60	.73	.89	1.09	1.34	1.65	2.05	2.54	3.15	26.86
Total	.65	.79	.96	1.18	1.44	1.77	2.19	2.71	3.36	4.18	5.21	49.51

Income Loss Due to AUM and Winter Elk (Capability to Support) Loss

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
AUM Income	8928	10900	13359	16430	20274	25091	31139	38740	48305	60353	75545	830627
Elk Income	9173	11077	13430	16347	19970	24482	30112	37149	45960	57009	70885	603652
Total	18101	21977	26789	32777	40244	49574	61251	75889	94265	117363	146430	1434280

Discounted AUM Income: 3181328 Discounted Elk Income: 2679220 Discounted Total Income: 5860548

HERBICIDE/HANDGRUB

Initial Acres Treated Per Year = 2246. Treatment Cost Per Acre = $ 73.73

Acres of Infestation, by Species, after Treatment in Indicated Year

Species	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Knapweed	2497	2253	1876	1265	343	75	0	0	0	0	0	0
Leafy Spurge	1115	1042	861	693	554	444	355	284	227	182	146	7
Toadflax	135	123	110	96	82	19	5	0	0	0	0	0
Thistle	334	330	325	320	315	71	16	4	0	0	0	0
TOTAL	4081	3748	3172	2374	1295	608	375	288	227	182	146	7

Acres Treated, by Treatment Type

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Tordon	-	2179	2179	2179	2179	1275	598	446	368	312	268	100
2,4-D	-	45	45	45	45	26	12	9	8	6	6	2
Hand Grub	-	22	22	22	22	13	6	5	4	3	3	1
TOTAL	-	2246	2246	2246	2246	1314	616	460	379	322	276	103

Pounds of Active Ingredient Applied, by Herbicide

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Tordon	-	1089	1089	1089	1089	637	299	223	184	156	134	50
2,4-D	-	90	90	90	90	53	25	18	15	13	11	4

Forage Loss (Cattle & Winter Elk) and Winter Elk (Capability to Support) Loss

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Cattle AUMs	375	341	284	204	94	49	32	25	20	16	13	1
Elk Months	300	275	228	167	86	52	36	29	23	19	15	1
# of Elk	60	55	46	33	17	10	7	6	5	4	3	0

Net Forage (Cattle & Winter Elk) and Net Winter Elk (Capability to Support), from Forest Plan Levels

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Cattle AUMs	63421	63454	63511	63591	63701	63746	63763	63770	63775	63779	63782	63794
Elk Months	19453	19478	19525	19586	19667	19701	19717	19724	19730	19734	19738	19752
# of Elk	3890	3895	3904	3917	3933	3940	3943	3944	3945	3946	3947	3950

HERBICIDE/HANDGRUB

Initial Acres Treated Per Year = 2246. Treatment Cost Per Acre = $ 73.73

Net Forage (Cattle & Winter Elk) and Net Winter Elk (Capability to Support), as a Percent of Forest Plan Levels

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Cattle AUMs	99	99	100	100	100	100	100	100	100	100	100	100
Elk Months	98	99	99	99	100	100	100	100	100	100	100	100
# of Elk	98	99	99	99	100	100	100	100	100	100	100	100

Net Value Loss (Cattle AUM and Winter Elk (HVD)) and Treatment Cost

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
AUM Loss	140	128	106	76	35	18	12	9	8	6	5	0
Elk Loss	6480	5928	4931	3597	1848	1113	785	624	499	400	320	15
Total Loss	6620	6055	5037	3673	1883	1132	797	633	507	406	325	16
Trtmnt Cost	0	165599	165599	165599	165599	96882	45418	33916	27944	23741	20350	7594
Total Cost	6620	171654	170636	169272	167482	98014	46215	34550	28451	24147	20675	7610

Discounted Total Loss: 18994 Discounted Treatment Cost: 872743 Discounted Total Cost: 891737

Employment Loss Due to AUM and Winter Elk (Capability to Support) Loss

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
AUM Employ	.24	.22	.18	.13	.06	.03	.02	.02	.01	.01	.01	.00
Elk Employ	.41	.37	.31	.23	.12	.07	.05	.04	.03	.03	.02	.00
Total	.65	.60	.50	.36	.18	.10	.07	.06	.04	.04	.03	.00

Income Loss Due to AUM and Winter Elk (Capability to Support) Loss

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
AUM Income	8928	8135	6781	4869	2250	1179	766	604	483	386	310	15
Elk Income	9173	8391	6980	5092	2616	1576	1112	883	707	566	453	22
Total	18101	16526	13761	9961	4866	2755	1878	1487	1190	952	763	37

Discounted AUM Income: 23899 Discounted Elk Income: 26356 Discounted Total Income: 50255

HANDGRUB

Initial Acres Treated Per Year = 2497. Treatment Cost Per Acre = $ 419.10

Acres of Infestation, by Species, after Treatment in Indicated Year

Species	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Knapweed	2497	2339	1689	1130	753	502	335	224	149	100	67	0
Leafy Spurge	1115	1249	1399	1566	1754	1965	2201	2465	2761	3092	3463	16924
Toadflax	135	140	146	152	158	164	171	178	185	192	200	346
Thistle	334	347	361	376	391	406	423	440	457	475	494	856
TOTAL	4081	4075	3594	3224	3056	3038	3129	3306	3552	3859	4224	18126

Acres Treated, by Treatment Type

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Tordon	--	0	0	0	0	0	0	0	0	0	0	0
2,4-D	--	0	0	0	0	0	0	0	0	0	0	0
Hand Grub	--	2497	2497	1695	1130	753	502	335	223	149	99	85
TOTAL	--	2497	2497	1695	1130	753	502	335	223	149	99	85

Pounds of Active Ingredient Applied, by Herbicide

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Tordon	--	0	0	0	0	0	0	0	0	0	0	0
2,4-D	--	0	0	0	0	0	0	0	0	0	0	0

Forage Loss (Cattle & Winter Elk) and Winter Elk (Capability to Support) Loss

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Cattle AUMs	375	371	317	274	253	246	250	263	282	308	338	1547
Elk Months	300	303	272	249	241	245	257	277	302	332	368	1741
# of Elk	60	61	54	50	48	49	51	55	60	66	74	348

Net Forage (Cattle & Winter Elk) and Net Winter Elk (Capability to Support), from Forest Plan Levels

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Cattle AUMs	63421	63424	63478	63521	63542	63549	63545	63532	63513	63487	63457	62948
Elk Months	19453	19450	19481	19504	19512	19508	19496	19476	19451	19421	19385	18012
# of Elk	3890	3889	3896	3900	3902	3901	3899	3895	3890	3884	3876	3602

HANDGRUB

Initial Acres Treated Per Year = 2497. Treatment Cost Per Acre = $ 419.10

Net Forage (Cattle & Winter Elk) and Net Winter Elk (Capability to Support), as a Percent of Forest Plan Levels

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
Cattle AUMs	99	99	100	100	100	100	100	100	100	100	99	98
Elk Months	98	98	99	99	99	99	99	99	98	98	98	91
# of Elk	98	98	99	99	99	99	99	99	98	98	98	91

Net Value Loss (Cattle AUM and Winter Elk (HVD)) and Treatment Cost

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
AUM Loss	140	138	118	102	94	92	93	98	105	115	126	578
Elk Loss	6480	6536	5864	5374	5211	5292	5559	5974	6518	7178	7951	37594
Total Loss	6620	6674	5982	5477	5305	5384	5652	6073	6623	7292	8077	38172
Trtmnt Cost	0	1046493	1046493	710375	473583	315582	210388	140399	93459	62446	41491	35624
Total Cost	6620	1053168	1052476	715851	478888	320966	216041	146471	100082	69738	49568	73795

Discounted Total Loss: 185720 Discounted Treatment Cost: 3936880 Discounted Total Cost: 4122600

Employment Loss Due to AUM and Winter Elk (Capability to Support) Loss

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
AUM Employ	.24	.24	.21	.18	.16	.16	.16	.17	.18	.20	.22	1.01
Elk Employ	.41	.41	.37	.34	.33	.33	.35	.38	.41	.45	.50	2.37
Total	.65	.65	.58	.52	.49	.49	.51	.55	.59	.65	.72	3.37

Income Loss Due to AUM and Winter Elk (Capability to Support) Loss

Item	Current	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2011
AUM Income	8928	8834	7554	6539	6020	5861	5965	6267	6730	7331	8058	36884
Elk Income	9173	9251	8301	7607	7376	7491	7869	8457	9226	10160	11255	53215
Total	18101	18086	15854	14147	13396	13352	13834	14724	15956	17491	19313	90099

Discounted AUM Income: 188105 Discounted Elk Income: 258721 Discounted Total Income: 446826

APPENDIX I

SENSITIVITY ANALYSIS

Page I-1 No Change.

Biological Analysis

Substitute the following on pages I-2 to I-5 of the 1987 EIS.

The results from the model for the scenarios indicate that an initial treatment level below approximately 1,400 acres per year will not bring the weeds under control. In addition, the philosophy of Alternative 3 will only allow Knapweed to be controlled. All scenarios of Alternative 3 with an initial treatment of over 1,400 acres per year result in 18,126 acres of Leafy Spurge, Toadflax and Thistle in year 2010.

All scenarios for Alternative 2 with an initial treatment of over 1,400 acres per year bring Knapweed, Toadflax and Thistle under control before the year 2011. Since Leafy Spurge is more difficult to eradicate, it is not brought under control by 2011 in any scenario; however, the greatest population in year 2011 is only 13 acres (Scenario 4).

A summary of selected biological effects for each scenario is presented in Table I-1 on the next page.

Economic Analysis

As discussed in Chapter IV, the alternative courses of action for most analyses are ranked on the basis of the present net value (discounted benefits less discounted costs), benefit/cost ratio (discounted benefits divided by discounted costs), annual equivalent value (annualized value of the present net value), etc. For this analysis, none of these indicators of economic efficiency apply. The reason for this is that there are no benefits produced by treating the infested acres, the only values produced are a reduction in the losses. For this analysis, the scenarios were ranked based on the present value of the total cost (total net value loss plus treatment cost).

Based on the present value of the total cost, the following is a ranking from best to worst (best meaning least cost) of the scenarios presented in this analysis:

Scenario	Present Value Total Cost	Change From Least Cost
9. Herbicide/Hand Grub - 4,000 Acres	$ 829,238	$ 0
8. Herbicide/Hand Grub - 3,500 Acres	832,218	2,980
7. Herbicide/Hand Grub - 3,000 Acres	841,722	12,484
6. Herbicide/Hand Grub - 2,500 Acres	865,827	36,589
5. Herbicide/Hand Grub - 2,000 Acres	935,749	106,511
4. Herbicide/Hand Grub - 1,500 Acres	1,333,286	504,048
1. No Action - 0 Acres	1,942,584	1,113,346
2. Herbicide/Hand Grub - 500 Acres	2,106,128	1,276,890
3. Herbicide/Hand Grub - 1,000 Acres	2,137,064	1,307,826
14. Hand Grub (Knapweed Only) - 2,500 Acres	4,121,344	3,292,106
13. Hand Grub (Knapweed Only) - 2,000 Acres	4,501,750	3,672,512
10. Hand Grub (Knapweed Only) - 500 Acres	4,746,164	3,916,926
12. Hand Grub (Knapweed Only) - 1,500 Acres	6,415,372	5,586,134
11. Hand Grub (Knapweed Only) - 1,000 Acres	7,340,438	6,511,200

A summary of selected economic efficiency and impact effects is presented in Table I-2 on the next page.

Table I-1

Summary of Selected Biological Effects, by Scenario

	Items						
Scenario	Area Treated Annually Acres	Total Weed Acres 1988	Total Weed Acres 2011	Cattle AUM Loss 1988	Cattle AUM Loss 2011	Elk Capacity Loss 1988	Elk Capacity Loss 2011
1	0	4,908	149,763	457	34,842	72	3,951
2	500	4,650	149,763	431	34,749	69	3,951
3	1,000	4,391	149,763	406	26,182	65	3,946
4	1,500	4,133	13	380	1	61	0
5	2,000	3,875	8	354	1	57	0
6	2,500	3,617	7	328	1	53	0
7	3,000	3,358	6	302	1	49	0
8	3,500	3,100	6	276	1	45	0
9	4,000	2,842	6	251	1	41	0
10	500	4,741	149,763	440	34,433	70	3,951
11	1,000	4,574	149,763	423	22,768	68	3,065
12	1,500	4,408	18,126	405	1,547	65	348
13	2,000	4,241	18,126	388	1,547	63	348
14	2,500	4,074	18,126	370	1,547	61	348

Table I-2

Summary of Selected Economic Efficiency and Impact Effects, by Scenario
(All dollar figures are expressed in 1985 dollars, discounted to present at 4%)

	Items				
Scenario	Initial Acres	Total Loss	Treatment Cost	Total Cost	Income Loss
1	0	$1,942,584	$ 0	$1,942,584	$5,860,548
2	500	$1,544,044	$ 562,083	$2,106,128	$4,569,178
3	1,000	1,012,898	1,124,166	2,137,064	2,892,508
4	1,500	57,747	1,275,538	1,333,286	161,905
5	2,000	23,132	912,618	935,749	62,047
6	2,500	16,553	849,273	865,827	43,257
7	3,000	13,862	827,860	841,722	35,575
8	3,500	12,264	819,954	832,218	31,064
9	4,000	11,392	817,846	829,238	28,749
10	500	$1,551,164	$3,195,000	$4,746,164	$4,570,162
11	1,000	950,444	6,389,994	7,340,438	2,715,520
12	1,500	206,666	6,208,706	6,415,372	508,483
13	2,000	189,188	4,312,562	4,501,750	457,033
14	2,500	185,707	3,935,638	4,121,344	446,786

Table I-3

Biologic and Economic effects, by Scenario

Table I-3 has changed from that included in the 1987 EIS, however it is not included in this supplement. Tables I-1 and I-2 contain summaries of the data in Table I-3. A copy of Table I-3 is available from the Forest Supervisors Office, Deerlodge National Forest if desired.

APPENDIX J

NOXIOUS WEED AND POISONOUS PLANT MANAGEMENT GUIDELINES

Deerlodge National Forest
February 1988

Substitute for Appendix J in the 1987 EIS.

I. INTRODUCTION

Education, prevention and control are the three major components of the NOXIOUS WEED AND POISONOUS PLANT MANAGEMENT GUIDELINES of the Deerlodge National Forest. All have equal status. The guidelines are statements describing actions that will be accomplished. Action plans based on the guidelines are being developed. These plans will define and schedule the specific activities and methods for accomplishment.

The Integrated Pest Management Working Group (IPMWG) has overall responsibility for the development of these guidelines and the associated action plans, subject to the approval of the Forest Supervisor and District Rangers. The working group also has the responsibility for coordinating action plan implementation at the Forest level and advising the Forest Supervisor concerning specific actions requiring his approval. Other responsibilities will be specified in the action plans.

II. OBJECTIVES

* To train employees to recognize noxious weeds.

* To inform the public and our employees about the economic and resource losses caused by noxious weeds and about measures which can be taken to prevent the spread of noxious weeds.

* To prevent new infestations.

* To reduce current levels of infestation and control new infestations.

* To emphasize biological and mechanical methods for the control of noxious weeds.

* To develop a cost effective control strategy.

* To develop funding sources for an effective noxious weed control program.

* To cooperate with other agencies and individuals in the control of noxious weeds.

III. PROGRAM COMPONENTS

A. Education and Awareness

1. In Service

a. Train employees involved in the control program according to state and federal standards. There will be at least one certified pesticide applicator on each district.

b. Train Employees so that they may readily recognize noxious weeds and poisonous plants present on the Deerlodge National Forest.

c. Encourage Employees to report infestations that they become aware of.

d. Encourage employees to cooperate in spot control of noxious weeds.

2. Out Service

a. Utilize public service outlets to inform Forest users of the noxious weed problem.

b. Participate in public meetings dealing with noxious weed control.

B. Prevention Program

1. In Service

a. Rehabilitate disturbed and deteriorated (low seral stage) sites to prevent new noxious weed infestations. Roads, landings, skid trails, and mine disturbed areas are examples of these sites.

b. Require weed free hay, straw, or pellet type feed for uses on the Forest at appropriate locations approved after NEPA analysis.

c. On all Forest projects evaluate the noxious weed and poisonous plant status of the project area and assess how the project will affect spread. Use appropriate contract clauses to require preventive and control measures on projects which have a reasonable chance for new infestations or accelerated spread.

2. Out Service

a. Participate in state, county and local prevention efforts.

b. Provide leadership in prevention efforts where our expertise exceeds that of other units or groups.

C. Control Program

1. In Service

a. Integrated pest management principles (FSM 2140) will be followed.

b. The overall strategy for noxious weed and poisonous plant control will be to control small and/or new infestations. Large infestations will be confined through use of biological, fire or other feasible control methods until adequate resources are available to control them.

c. District personnel will begin data collection to provide more accurate noxious weed and poisonous plant inventory data. Specifically, project areas will be mapped on 1:24000 scale topographic maps; and ecodata, habitat type, soil, and other needed environmental parameters will be included in the inventory

d. The Districts will annually submit their proposed weed control program for review by the IPMWG.

e. The IPMWG will develop a computer assisted inventory and project tracking program and analysis system to:

1) Record all previous chemical applications.

2) Document current conditions.

3) Monitor results.

4) Identify priorities among inventoried projects.

5) Recommend allocation of funds based on priorities and successes.

6) Analyze annual progress.

f. For the 10 year program and the upcoming year's budget, annually request sufficient funds needed to reduce infestation levels on the Forest.

g. Monitoring

1) Establish transects to document formulation effectiveness and environmental impacts.

2) Through analysis of monitoring results refine herbicide application rates and formulations.

h. NEPA Process

1) Consider the potential spread of noxious weeds and appropriate mitigation measures in all NEPA documents.

2) Revise and/or update as necessary the Forest EIS on the treatment of poisonous plants and noxious weeds.

2. Out Service - Coordinate with local agencies and individuals. Coordination will be used to prioritize projects for the annual control program.

APPENDIX K

AQUATIC MONITORING PLAN - ROCK CREEK

This monitoring plan was developed to ensure that herbicide impacts on the aquatic resource are not greater than predicted. Specifically, the objective is to ensure that herbicide concentrations do not exceed the tolerance limits of aquatic life-forms.

A review of the literature indicates that very little chemical enters the aquatic system during ground spraying operations if label precautions are followed. However, the literature also indicates that concentrations of chemicals in streams can increase following the first significant rainfall after herbicide application.

Water samples were dropped from consideration because getting a meaningful water sample from a remote site after a significant precipitation event is almost impossible. Summer rainstorms are usually localized and may or may not produce runoff. Also, herbicide concentrations, if they occur, will peak and tail off shortly after the beginning of the event.

Aquatic invertebrates are good indicators of herbicide contamination because 1) they are subject to herbicide effects continously through the sample period, 2) they have tolerance limits of the same order of magnitude as the fish species of concern, and 3) population samples can be readily collected, analysed, and interpreted. Therefore, aquatic invertebrates will be sampled on at least one stream in Rock Creek. The stream selected will contain herbicide application projects which have the greatest risk of streamflow contamination. We expect that all streams will have a low risk of contamination since a safety margin of more than 1.0 will be attained on all projects within the Rock Creek drainage.

The monitoring design will consist of one of the the following:

1. Monitor one stream above and below the project area. In this case, invertebrate samples will be collected as close to the herbicide application date as feasible, but not more than 15 days before application. A second set of invertebrate samples will be collected after the first major rainstorm or not more than 15 days following herbicide application. Each collection will consist of three samples at each sample point on each date.

2. In the event that above and below sampling is not feasible, the second choice for project design will be to choose a similiar stream to serve as a control. Sampling will take place on the same date in both streams and will be compared with samples taken from both streams after project completion. Timing will be the same as in Alternative 1.

The samples will be analysed by Dr. Fred Mangum, Aquatic Ecosystem Analysis Laboratory. No action will be taken if the results of analysis and interpretation indicate no effect on the invertebrate populations. If an effect is observed, the project will be reviewed on the ground to determine why herbicide reached the stream. Assuming that all precautions have been observed additional precautions will be called for on future projects, i.e. larger buffer strips and reductions in the total amount of herbicide allowed within individual watersheds.